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FLORA INDICA;

OR,

DESCRIPTIONS OF INDIAN PLANTS.

BY THE LATE

WILLIAM ROXBURGH, M. D. F. R. S. E.

ETC. ETC.

VOL. II.

SERAMPORE:

PRINTED FOR W. THACKER AND CO. CALCUTTA,

AND

PARBURY, ALLEN AND CO. LONDON.

1832.

Mo. Bot. Garden
1897.

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FLORA INDICA.

CLASS V.

PENTANDRIA MONOGYNIA.

VINKA, Schreb. gen. N. 419.

Corol funnel-shaped. *Follicles* two, erect. *Seeds* naked. *Embryo* inverse, and furnished with a perisperm.

1. V. *rosea, Willd.* i. 1233.

Perennial, erect, ramous. *Flowers* in pairs, sessile. *Leaves* ovate-oblong, base of the petiole two-toothed.

Hind. Gool-fering.

Obs. Both the red and white varieties are common in gardens over India, and in flower great part of the year. I have never found it in its native state.

2. V. *parviflora, Willd.* i. 1234. *Retz. Obs.* ii. *N.* 33.

Annual. *Leaves* lanceolate; flowers in pairs. *Mouth* of the tube contracted, and shut with hairs.

Cupa-veela, *Rheed. Mal.* ix. *t.* 33.

Vinka pulsilla, *Linn. suppl.* 166.

A small, erect, annual, ramous plant; a native of open, fertile, cultivated lands. *Flowers* during the wet season.

Stem erect, smooth, branchy, four-sided; *angles* acute, from six to twelve inches high. *Leaves* opposite, short-petioled, lanceolate, entire, smooth; about two inches and a half long, and three-fourths of an inch broad. *Stipules* subulate. *Flowers* axillary, in pairs, small, white, short-

peduncled.—*Corol*, mouth of the tube contracted, and shut with hair.—*Nectarial* corpuscles as in the family.

NERIUM, Schreb. gen. N. 420.

Corol funnel-shaped; mouth of the tube variously crowned. *Germ* two-celled; cells many-seeded, attachment interior. *Follicles* two. *Seeds* many, comose. *Embryo* inverse, (sub-convolute, or expanded.)

1. N. *odorum, Willd.* i. 1235.

Leaves linear-lanceolate, tern. *Segments* of the calyx erect. *Nectaries* many-cleft, divisions filiform.

Sung. Karavira, vide *Asiat. Researches*, iv. 265.

Beng. Kurubee, Rukta Kurubee (the red variety), Sweta Kurubee (the white variety), Pudma Kurubee the double variety).

Hind. Lall-Karpud, (the single rose-coloured), Suffet or shwet Karpud (single white), Padmu-Karpud (the double variety.)

Belutta-areli, *Rheed. Mal.* ix. *t.* 2.

Tsjovanna-areli, *Rheed. Mal.* ix. *t.* 1.

Common in gardens in every part of India, and in flower the whole year.

2. N. *coccinœum, R.*

Arboreous. *Leaves* sub-sessile, ovate-oblong, entire, apex alternate. *Flowers* terminal, three or four; nectarium acetabuliform. *Follicles* linear, rough.

Pullum, the vernacular name in Silhet.

A native of the eastern frontier of Bengal, beyond the mouth of the Megna, from thence introduced by R. K. Dick, Esq. into the botanic garden at Calcutta, where it blossoms in April. In its native soil it grows to be a large

timber tree ; the wood white, remarkably light, but firm, and much used by Turners to make palkees, &c. where light, strong wood is required.

Stem (in plants six or seven years old) short, but straight, and to the base decorated with numerous patent branches and branchlets. *Bark* of the ligneous parts ash-coloured and smooth ; whole height from six to ten feet. Lactescent. *Leaves* opposite, very short-petioled, bifarious, ovate-oblong, entire, long, taper-pointed, smooth on both sides, dark green, from two to six inches long, and from one to two and a half broad *Stipules*, some short bristles in the axil of the leaves. *Flowers* terminal, solitary, tern, twice tern, or more, with one in the forks, short-peduncled, and pedicelled, large, of a deep, but rather dull red. *Bractes* opposite, lanceolate, waved. *Calyx* divided to the base into five, nearly equal, subcordate, smooth segments, with somewhat waved margins. *Corol. Tube* very short, fleshy, sub-campanulate. *Border* divided into five, obliquely-obovate, thick, tough segments, soon after expansion they become revolute. *Nectarium* five-lobed ; crimson-coloured ; lobes with rounded, somewhat crenulate margins and firmly united to the base of the segments of the corol. *Filaments* very short and thick, inserted on the mouth of the tube of the corol, within the nectary. *Anthers* sagittate, united, and forming a conic dome over the stigma. *Germ* two-lobed ; each lobe one-celled, with numerous seeds attached to the incurved margins of the suture on the inside. *Style* cylindric. *Stigma* with two-lobed apex. *Follicles* two, linear, about as thick as the little finger, and nearly twelve inches long, olive-coloured, but rendered rough with elevated white specks. *Seeds* numerous, imbricated, linear-lanceolar, with very ample coma, pointing to the base of the follicle. *Integuments* two, the exterior one rather thick; the interior one a thin membrane adhering to the embryo. *Perisperm* none.

Embryo inverse; cotyledons triangularly convolute. *Radicle* cylindric, superior (pointing from the coma to the apex of the follicle.) The whole almost exactly as in *Gaertner's Nerium Zeylanicum*, 2. *p.* 172 *t.* 117.

3. N. *tinctorum, R.*

Arboreous. *Leaves* opposite, ovate-oblong. *Panicles* terminal. *Follicles* pendulous, very long, united at the apex.

Nerium indicum, &c. *Burm. Zeyl.* 167. *t.* 77.

Telinga. Chite-ancalloo.

A middling-sized tree, agreeing perfectly in its botanical character with *Nerium* of the *Linnean sexual system*, and from the quality of its leaves I have called it (*Nerium*) *tinctorium*. *Dyer's rose bay*, for to me it seems a new species; at least it is not taken notice of by *Linnæus*, nor by his son in his last Botanical publication, the *Supplementum Plantarum* published in 1781. It comes nearest Nerium *antidysenterium*, the tree which yields the Conessi bark of our Materia Medica, *Cadaga-pala* of the *Hortus Malabaricus*, *Pala Cadija* of the Telingas. They are both natives of the lower region of those mountains which bound the Rajamundry Circar on the north side, and are so much alike in most respects, (the Nectarium excepted) that without a tolerable knowledge of both, the one may be mistaken for the other; and I have no doubt but the bark of the *Nerium* may have been gathered and sold for *Conessi* bark to which I attribute the disrepute that has fallen upon *Conessi* bark in Europe; for with the natives of most parts of India it is deemed a specific in most complaints of the bowels. And I am inclined to think it deserves a better name than it has hitherto acquired amongst Europeans.

Trunk very irregular in shape, when very old it is from one and a half to two feet in diameter, but when of that size, it is full of large, rotten cavities; its height to

the branches when large, is from ten to fifteen feet ; the *bark* of the old wood is scarbous, of the young pretty smooth, and ash-coloured. *Wood* remarkably white, close-grained, very beautiful, coming nearer to *Ivory* in appearance than any other I know. *Branches* irregularly disposed, being bent in various directions; small branches opposite. *Leaves* numerous, opposite, short-petioled, oval-pointed, pretty smooth, entire, pale green ; when full grown from six to ten inches long, and from three to four broad. *Stipules* none. *Flowers* about an inch and a half in diameter, when fully expanded perfectly white, fragrant, disposed on lax globular panicles at the extremities of the branches. *Bractes* a small oval one below each sub-divisions of the panicle. *Calyx* divided into five equal semi-orbicular, permanent segments. *Corol* one-petalled. *Tube* short, somewhat gibbous. *Border* large, divided into five, oblique, linear-oblong, spreading segments. *Nectarium* many ramous, white filaments crowning the mouth of the tube of the corol, (no nectary in the *Conessi* bark tree). *Filaments* five, very short, rigid, inserted just within the mouth of the tube, and within the nectarium. *Anthers* arrow-shaped, rigid. united to one another laterally, forming a very firm, conical cover for the stigma, their lower parts inwardly are covered with fine white hairs. *Germ* two, seemingly united. *Style* the length of the tube. *Stigma*, double, covered with transparent gluten, by which it adheres to the inside of the anthers. *Follicles* two, very long, slender, pendulous, united at both ends singly, they are from twelve to twenty inches long ; and about as thick as a common pencil. *Seeds* numerous, long, slender, crowned with down, like the seed of the common thistle. *Embryo* inverse, without perisperm, and the cotyledons rolled up in a compound manner between involute and convolute.

Obs. This tree as I observed before, is a native of the

hills and lower regions of the mountains directly north from *Coringa* in the Rajamundry Circar, and delights most in the south or sunny side of these hills and mountains. I am informed that it also grows in great plenty over the *Carnatic*, and in every part of the Circars where there are hills or mountains, being an extent of above one thousand miles in length, and of breadth uncertain.

It contains a milky juice, chiefly in the tender branches and young leaves, which flows freely on being wounded. The natives make scarcely any use of it, except for firewood; and the more it is cut down, the more it increases: many shoots issuing from the old stumps, these in one year acquire various heights, from one to ten feet, according to the nature of the soil, &c. and are thick in proportion. It casts its leaves during the cold season; about the beginning of the hot season in March and the beginning of April, the young leaves begin to make their appearance, together with the flowers; by the end of the month (April,) those that first began to be unfolded, will have attained to their full size. This I have found to be the proper time to begin to gather the leaves, and make the indigo, about this time also it ceases flowering, and the seed vessels are fully formed, but the seeds are not ripe until January or February.

The colour the leaves acquired in drying for my Hortus siccus, particularly if they chanced to be bruised, first induced me to think they possessed colouring matter, and the result of some experiments fully answered my expectations; although I have been often deceived by the same appearances in the leaves of other plants. For an account of the method of making the indigo, see separate treatise.

4. N. *tomentosum, R.*

Arboreous. *Leaves* oval, pointed, downy. *Nectarium*

of fleshy lacerated glands, on the mouth of the tube. *Anthers* without threads. *Follicles* divaricate, sub-cylindric.

Nelam-pala, *Rheed. Mal.* ix. *t.* 3 and 4.

Telinga. Poota-jeeleroo.

A small tree; a native of the mountainous parts of the Circars; flowers during the hot season. *Bark* rust-coloured, with small scabrous, light-coloured specks; the young shoots very downy. Every part of the plant discharges a yellow, milky juice on being wounded.

Leaves opposite, short-petioled, oval, pointed, both sides downy, from two to three inches long, and one and a half, or two broad. *Stipules* none. *Panicles* corymbiform, terminal, small. *Bractes* minute, caducous. *Flowers* pretty large, white; *nectary* orange-coloured. *Calyx*, the segments are ovate and obtuse. *Corol.* *Tube* gibbous, firm, somewhat fleshy. *Nectary* fleshy, and lacerated into obtuse, fleshy segments. *Anthers* arrow-shaped, converging; they terminate in a sharp rigid point without any thread. *Follicles* about eight or nine inches long, and two in circumference, scabrous.

Obs. With the yellow juice which flows from the wounded plant, diluted with water, bits of cotton cloth were died a pretty good yellow, which still continues bright as at first, now two years.—*Seeds* numerous, oblong compressed. *Coma* pure white and delicately fine. *Integuments perisperm* and *embryo*, as in the *Apocineæ*.

5. N. *pisidium. R.*

Leaves oblong entire, lucid. *Panicles* terminal brachiate shorter than the leaves. *Flowers* salver shaped. *Nectaries* bifid, and villous. *Follicles* oblong, obtuse, smooth, buffed.

Echaulut or Echalut the vernacular about Silhet.

An extensive, perennial woody climber, a native of Silhet in Bengal; flowering in May and June seed ripe in January. Its bark, contains a quantity of fibrous matter,

which the natives of the country where the plant grows, use as a substitute for hemp. In steeping some of the young shoots in a fish pond in order to accelerate the removal of the bark, and cleaning the fibres, many, if not the whole of the fish were killed, hence the specific name.

Stem and larger branches ligneous, and ramble to a vast extent. *Young shoots* long, round and smooth. *Leaves* opposite, short-petioled, oblong, taper-obtuse jointed, entire, firm and lucid; about six inches long, by two broad. *Panicles* terminal, sub-globular; composed of a few pairs of brachiate, short, few-flowered branches; all are round and smooth. *Flowers* many, large, pale yellow salver-shaped. *Bractes* oblong, rather obtuse, and small. *Calyx* five-leaved. *Leaflets* ovate smooth. *Tube* of the corol larger than the five obliquely trapiziform segments of its border, gibbous in the middle where the stamina are lodged. *Nectarium* consists of five bifid, villous segments, rising from the five fissures of the border of the corol, round the mouth of its tube. *Germ* two-lobed, two-celled, with numerous ovula in each, attached to an elevation down the centre of the partition. *Style* scarce half the length of the tube. *Stigma* large, with contracted bifid apex. *Follicles* ovate-oblong, while fresh very large, by being much inflated or puffed, smooth, obtuse, greenish yellow when ripe. *Seed* many, thin, oval, with broad membranaceous margin, crowned. *Integuments* two, exterior, soft, smooth, light brown; interior, rather fleshy while the seeds are recent. *Perisperm* no other than the interior integument of the seed. *Embryo* inverse, *cotyledons* round-cordate, strongly marked with veins. *Radicle* cylindric, superior.

6. N. *reticulatum, R.*

Shrubby, twining. *Leaves* oblong, smooth. *Cymes* axillary. Nectarial scales five, wedge-shaped.

Kalli-pal-valli. *Rheed. Mal.* 9. *t.* 11.
Apocynum *reticulatum*. B. H.
Teling. Adivi pala-tiga.
Hind. Karunta.

A large twining shrub, a native of hedges, thickets, &c. Flowering time the rainy season, abounds with milky juice.

Leaves opposite, short-petioled, obovate, or oblong, entire, smooth, very pale underneath; with numerous, small, reticulated veins running through every part, from three to six inches long. *Cymes* axillary, many times shorter than the leaves, and short peduncled, many-flowered. *Flowers* small, yellow. *Calyx* five-parted; *division* short, ovate. *Corol; tube* very short, gibbous; *divisions* of the border linear-lanceolate. *Nectary* five wedge-formed scales, inserted on, or rather in the mouth of the tube. *Stamens* within the tube, below the nectarial scales. *Style* short. *Stigma* peltate, five sided. *Follicles* lanceolate, horizontal, about three inches long.

7. N. *chinensis, Hunter.*

Shrubby, with erect, dichotomous branches. *Leaves* sub-sessile, ovate-lanceolate, smooth. *Peduncles* terminal, becoming lateral, or in the forks of the branches, few-flowered. *Segments* of the corol narrow, and end ensiform. *Stamina* in the base of the tube.

A native of China. In one garden on Pulo-penang Dr. Hunter found it in blossom in July.

I can find no nectarial crown on the tube of the corol, hence I suspect it to be an Echites.

8. N. *caudatum, R.*

Shrubby, scandent. *Leaves* oblong, smooth. *Cymes* terminal. *Segment* of the corol ending in long, filiform points.

A large climbing shrub, a native of the mountainous

parts of the Coast, bark ash-coloured with scabrous specks.

Leaves opposite, short-petioled, oval, waved, smooth, shining. *Corymbs* terminal, two-forked. *Bractes* narrow-lanceolate, revolute. *Flowers* large, pretty numerous. *Calyx* five–cleft ; *divisions* linear, waved, revolute, coloured, very much like the bractes. *Corol ; tube* contracted at the middle, each of the segments of the border ending in a large linear filament, as in *Echites caudata*. *Nectary* crowning the mouth of the tube as in the family. *Anthers* within the tube, and ending in filaments as in the genus. *Germs* two. *Style* length of the tube, white, rugose as if it were composed of small air bladders.

I know of no use any part of this plant is put to. If Burman's *Echites caudata* is the same, the nectary, and threads to the anthers, are omitted in his figure, *Flora Indica Table* 26. Is allied to De Candoll's *Strophanthus*.

9. N. *grandiflorum, R.*

Shrubby, twining. *Leaves* oblong, polished. *Flowers* terminal. *Nectaries* bifid. *Follicles* three-sided horizontal.

A native of the Peninsula of India. In the botanic garden at Calcutta it is in flower great part of the year though the seeds do not often come to maturity.

Stem stout, and woody. *Bark* smooth, greenish ash colour. *Branches* twining up and over trees of very considerable size,every part abundantly lactescent when wounded. *Leaves* opposite, short petioled, oblong, entire, obtuse-pointed, polished on both sides; underneath minutely reticulated, about three inches long, by one and a half broad. *Flowers* terminal, from one to many, forming a dichotomous raceme with one in the fork, very large, pale pink. *Bractes* conically-lanceolate, opposite, caducous. *Calyx* five-leaved. *Leaflets* oval-lanceolate, with ample, thin curled margins. *Corol* campanulate, half five-cleft. *Nectaries* five, not alternate with, but attached to the tube of

the corol immediately above the stamina ; each divided into two long, filiform, coloured segments. *Filaments* short, inserted on the contracted base of the tube of the corol. *Anthers* cordate, incurved in form of a dome over the stigma. *Germs* two, one-celled, each containing many ovula attached to a large projecting fleshy receptacle on the inside. *Style* at the base double and coalescing into one body near the top. Stigma single, large, globular, with the vertex two-toothed, and five glands round the side, which are firmly attached to the inside of the five anthers near their base, between these are five dark-coloured, spoon-shaped scales, which become detached by age. *Follicles* horizontal, three sided, with the angles sharp; tapering to a long, incurved, rather obtuse beak.

ECHITES.

[By some accident the Generic Character of Echites, and the description of the three first species, viz. Antidysenterica, Tinctoria, and Scholaris are wanting in my copy of Dr. Roxburgh's work; The two first of these are now removed to Wrightea, and the last to Alstonia. It is thought better to print the genus as it stands with this deficiency, than to insert a generic character of the genus, and a description of the three species which would not be Dr. Roxburgh's. *W. Carey.*]

4. E. *caryophyllata, R.*

Twining. *Leaves* ovate-cordate, pointed. *Cymes* terminal. *Tube* gibbous at top. *Nectary* tubular, five-toothed, *Segments* of the corol, triangular.

Sans. Malati. *See. Asiat. Res.* iv. 246.

Kemetti valli. *Rheed. mal.* ix. *t.* 135.

Compare with E. *costata Willd.*

This is a large twining shrub, a native of mountainous tracts only. It flowers during the wet season; the flowers are delightfully fragrant, partaking much of the smell of cloves. *Stem* woody, twining, as thick as a man's

leg. *Bark* dark rust-colour, with fissures and scabrous specks. *Leaves* opposite, short-petioled, ovate-cordate, pointed, entire. *Petioles* with the nerve and veins coloured red. *Cymes* terminal, sub-globular. *Bractes* falling. *Flowers* numerous, large, pure white, delightfully fragrant. *Calyx* five-leaved, leaflets lanceolate, as long as the corol, somewhat coloured, on the outside a little downy. *Corol; tube* five-sided, gibbous; *segments* of the border large, triangular. *Nectary* and pistillum as in other species. *Follicles* cylindric, spreading. *Seeds* a few, very large, crowned with down.

The delightful smell of the flowers of this plant, as well as their beauty, makes it highly deserving a place in the flower garden. On my arrival in Bengal I found it in a few gardens only.

5. E. *frutescens, R.*

Twining. *Leaves* oblong, pointed. *Panicles* terminal; *segments* of the corol long twisted and hairy; *tube* gibbous above the middle. *Nectary* of five headed filaments. *Follicles* linear.

A. floribus fasciculatis. *Burm. zeyl.* 23. *t.* 12 *f.* 1.

Syama. *Asiat. Res.* iv. 261.

Beng. Syama-luta.

Teling. Nalla-tiga.

This plant Dr. Konig thought was *Apocynum frutescens* of *Linnæus*. It is a large, ramous, twining, shrubby species; common in hedges, &c.

Leaves opposite, short-petioled, oblong, or broad-lanceolate, pointed, smooth, entire; from one to two inches long. *Panicles* terminal; *ramifications* opposite. *Flowers* small, white, inodorous. *Corol. Tube* gibbous where the stamens are lodged; *mouth* contracted, and shut with hairs; *segments* of the border linear, twisted hairs. *Nectary* five subulate bodies with large recurved heads, surrounding the germs. *Style* single, of a length sufficient to

bring the large, compound *Stigma* in contact with the anthers. *Follicles* and seeds as in the genus.

6. E. *macrophylla, R.*

Shrubby, twining. *Leaves* sub-rotund acuminate, downy underneath. *Cymes* terminal.

Belutta-kaka-kodi. *Rheed. mal.* ix. *t.* 5 and 6.

Harkee the vernacular name in Silhet; where it is indigenous. Flowering time the hot months of May and June; the seeds do not ripen until the following March or April. *Stem* and larger branches ligneous, twining, young shoots marked with little elevated brown specks. *Leaves* opposite, short-petioled, from oval to roundish oval, entire, acute, downy underneath; from ten to twelve inches long by from seven to ten broad. *Cymes* terminal, elevated on a strong erect peduncle, many-flowered. *Flowers* very large, white. *Bractes* opposite, at the divisions of the cyme, ovate, acute. *Calyx* companulate, five toothed. *Corol* infundibuliform. *Tube* gibbous immediately above the base where the anthers are lodged; segments of the border unequally obovate, spreading. *Filaments* short, hairy. *Anthers* sagittate, united at the sides into a cone over the stigma. *Germ* superior, ovate, two-lobed, two-celled, with many ovula in each, attached to the thick middle of the partition. *Style* short, grooved, as if composed of two portions firmly united. *Stigma* headed, with an acute, bidentate apex. *Follicles* pendulous, about twelve inches long, and as thick as the little finger, tapering to an acute point, pretty smooth. *Seeds* numerous, large, spatulate; *coma* ample, pointing to the apex of the follicle; the reverse of Nerium coccinum. *Integuments* single, firm, and brown. *Perisperm* in a small quantity; in fact an interior integument. *Embryo* inverse. *Cotyledons* oblong. *Radicle* subcylindric, superior, and pointing to the *coma*.

7. E. *grandiflora, R.*

Scandent. *Leaves* cuneate-oblong. *Cymes* terminal, and axillary. *Leaflets* of the calyx-lanceolar, waved, and coloured. *Corol* companulate. *Follicles* linear.

A native of the hilly parts of *Chittagong* and *Silhet*, where it blossoms during the dry season. The seeds take nearly one year to ripen.

Stem and large branches ligneous, and scandent to a very great extent, young shoots villous. *Leaves* opposite, short-petioled, from oblong-cuneiform, to obovate-oblong, entire, apex rounded, with a short point; void of pubescence, hard; from six to eight inches long by from two to five broad. *Cymes* axillary, becoming lateral, short, few-flowered, all the parts thereof clothed with ferruginous down. *Flowers* very large, equalling those of *Solandra grandiflora;* greenish yellow. *Bractes* oblong, coloured and veined. *Calyx* to the base divided into five long, lanceolate, waved, acute, coloured, veined segments. *Corol* campanulate; *border* expanding about five inches, and divided into five oval, waved, rather acuminate, broad segments. *Filaments* five, nearly as long as the corol, ascending in a gentle curve, smooth, inserted into the base of the bell of the corol. *Anthers* sagittate, sides firmly united, forming a conical cover for the stigma, to which they cohere. *Germ* two-lobed, hairy, two-celled; *ovula* numerous, attached to a jugiform receptacle in each cell, rising from the partition. *Style* length of the stamina. *Stigma* large, clammy. *Follicles* horizontal, linear, obtuse, pretty smooth, the thickness of the little finger; points rather incurved, and obtuse; from six to ten inches long. *Seeds* numerous, imbricated, oblong, compressed, brown, comose; *coma* very ample. I have rarely seen so large points to this apex of the follicles. *Perisperm* thin, light grey. *Embryo* straight. *Cotyledons* oblong. *Radicle* long-cylindric, superior.

8. E. *acuminata, R.*

Shrubby, scandent. *Leaves* from oblong to broad-lanceolate, acuminate, Panicles axillary, longer than the leaves, diffuse, trichotomous, segments of the corol linear and falcate. *Follicles* filiform, about eight inches long.

Pingoree, or Bengeree the vernacular name in Silhet, where the plant is found in the forest, climbing up and over trees, &c. to a large extent. *Flowering* time May; the seeds ripen in about nine months.

Young shoots rather rough with little, lighter coloured, elevated specks. *Leaves* opposite, short-petioled, broad-lanceolate, entire, acuminate, smooth; from two to four inches long, by one and a half broad. On young plants linear-lanceolate, and waved. *Panicles* axillary, solitary in one axil, the other vacant, longer than the leaves, lax, trichotomus throughout, smooth. *Flowers* many, large, white, and fragrant. *Bractes* opposite, long, slender, and smooth. *Calyx*, large divided to the base, into five, long, narrow smooth segments. *Corol. Tube* the length of the calyx, enlarged at the base, the border cut in to five long, narrow, falcate, curled segments, which are imbricated in the bud. *Nectary* cup-shaped, embracing the base of the germs, obscurely five-toothed. *Filaments* five, short, attached to the tube a little below the middle. *Anthers* sagittate, completely within the mouth of the tube, *Germs* two, or very completely two-lobed, each one-celled, containing numerous ovula, attached to a grooved vertical receptacle on the inside. *Style* half the length of the tube. *Stigma* large, oblong, bidentate. *Follicles* pendulous about a foot and a half long, and not thicker than a goose quill, dark brown, marked with small lighter coloured specks. *Seeds* many, crowned with an ample *coma*, which points to the apex of the follicle. *Perisperm* scarcely any. *Embryo* inverse.

9. E. *marginata, R.*

Shrubby, scandent. *Leaves* lanceolate; an anastomosing vein near the margin. *Panicles* terminal, corymbose.

Dood-luta the vernacular name in Silhet, where it is indigenous climbing up, and over trees &c. Flowering time April and May when the air is perfumed with its fragrance.

Leaves opposite, short-petioled, lanceolate, entire, smooth, veins large, apices anostomosing and forming a waved line within the margin; from two to six inches long. *Panicles* terminal, longer than the leaves, lax, corymbiform; first ramifications opposite, i. e. subtrichotomous afterwards dichotomous; all smooth. *Bractes* ensiform. *Flowers* many, large, white, fragrant. *Calyx* five-leaved; *leaflets* ensiform. *Tube* of the corol gibbous at the base, the stamina lodged near the middle. *Segments* of the border five, linear, falcate. *Nectary* a ring round the base of the germ. *Germi* two-lobed; *ovula* in each lobe numerous, attached to a projecting receptacle down the centre of the partition. *Style* half the length of the tube of the corol. *Stigma* large, oblong, bidentate.

10. E. *cymosa. R.*

Shrubby, hairy. *Leaves* elliptic, acuminate. *Cymes* terminal, shorter than the leaves, crowded. *Calyx* five leaved, length of the corol. *Nectary* poculiform, with five-toothed mouth.

Kasee. Ewtaesbrab.

A native of the copses, or low jungle in the Silhet district, where it grows to be a middle sized, ramous shrub; flowering in May.

Young shoots hairy.

Leaves petioled, opposite, elliptic, acuminate, hairy, particularly underneath; from three to four inches long, by from one and half to two and half broad. *Cymes* terminal, subglobular, much shorter than the leaves, crowd-

ed with small dull white, fragrant flowers. *Bractes* ensiform, hoary. *Calyx* of five, hoary, ensiform leaflets, scarcely united at the base, and as long as the tube of the corol. *Corol* hoary on the outside. *Tube* gibbous; border of five, obliquely ensiform segments, which are shorter than the tube, and white in the bud, imbricated. *Nectary* poculiform, embracing very completely the whole germ; *mouth* five-toothed. *Anthers* within the tube, sagitate. *Germ* of two distinct lobes, their apices very hairy, each lobe one-celled, and containing numerous ovula attached to a vertical ridge on the partition. *Style* short. *Stigma* large, acuminate, adhering by gluten to the inside of the anthers.

8. E. *paniculata, R.*

Shrubby, scandent. *Leaves* broad-lanceolar, entire, smooth. *Panicles* axillary and terminal, trichotomous throughout. *Nectary* cup-shaped, surrounding the germ, five-toothed. *Follicles* obclavate, few-seeded.

An extensive, powerful, woody rambler; a native of the forests of Silhet. Flowering in March and April, the seeds from the flowers of the former year ripening about the same time.

Young shoots round and perfectly smooth. *Leaves* opposite, short-petioled, broad-lanceolar, smooth and of a very firm texture, entire, obtuse-pointed; from four to eight inches long, and from one and a half to three broad. *Stipules* none. *Panicles* axillary, and terminal, longer than the leaves, smooth in every part, throughout trichotomous to the extreme divisions, and they are three-flowered. *Bractes* oval, embracing the base of the divisions. *Flowers* very numerous, and very small, pale-yellow. *Calyx* five parted. *Corol* with a short gibbous tube, and border of five, falcate, woolly-margined segments. *Nectary* cup-shaped, five-toothed, embracing the lower half, or more, of the germ. *Filaments* short. *Anthers*

saggitate, adhering to each other, in the gibbous part of the tube, and forming a dome over the stigma. *Germs* two-lobed, two celled, &c. *Style* very short. *Stigma* very large, with a pointed, bifid apex. *Follicles* horizontal, five or six inches long, as thick as the little finger at the base, and from thence tapering to an obtuse point, smooth. *Seeds* a few, with an immensely long and large coma to the *apex* and *Embryo*, as in the *Asclepiadæ*.

9. E. *hircosa*, *R.*

Twining. *Leaves* petioled, oval, smooth. *Panicles* axillary, globular, and open. *Anthers* exert, a pearl like gland on the back.

Pergularia *glabra*. *Willd*. 1. 1247.

Flos *pergularia*. *Rumph*. *amb*. 51. 29. *f*. 2.

A pretty extensive, perennial, twining shrub; a native of *Bengal*, but scarce. The flowers are pretty white, larger and more numerous than in *dichotoma*, but have a very offensive smell, truly goatish, as noticed by Rumphius. It flowers about the end of the hot season, and the beginning of the rains in May and June.

Leaves opposite, rather short-petioled, oval, somewhat pointed, entire, smooth; from three to five inches long, and from two to three broad. *Panicle* axillary, shorter than the leaves, subglobular, very open, though very ramous, slightly villous. *Flowers* large, pure white, long pedicelled. *Bractes* from lanceolate to ensiform. *Calyx* 5-parted; *segments* sub-lanceolate, acute. *Corol* with a short, rather gibbous tube. *Border* of several round spreading segments; which are imbricated in the bud. *Nectary* of five, fleshy, smooth scabs, covering the germ. *Filaments* five from the mouth of the tube, thick, and short. *Anthers* saggittate, forming a pointed cone over the stigma on the base; on the outside a large, beautiful pearl-like gland. *Germ* hairy, two-lobed, 2 celled; *Ovula* numerous, attached to an elevated vertical receptacle on the partition. *Style* long-

er than the tube of the corol, columnar. *Stigma* large, clammy, and adhering to the anthers, apex two-toothed.

13. E. *dichotoma, R.*

Twining. *Leaves* opposite, lanceolate-oblong.

Racemes axillary, dichotomous. *Segments* of the corol obovate. *Filaments* thick, headed, and woody.

Beng. Happur-malee.

Pergularia *glabra, Kon. in B. H.*

A large, twining, shrubby plant, found in forests, &c. near *Calcutta;* flowering time, the hot season. *Stems* ligneous. *Branches* numerous, spreading and twining; *bark* of the woody part ash-coloured, of the young shoots green and smooth. *Leaves* opposite, very short-petioled, from oblong to lanceolar, acute, recurved, entire, smooth; from two to three inches long, and from one, to one and a half broad. *Stipules*, some awl-shaped, brown glands surrounding the insertions of the leaves. *Racemes* axillary, or a little above, solitary, generally two-cleft, or two racemes to a common peduncle, rachis winding. *Flowers* alternate, generally solitary, pretty long-pedicled, large, pure white, pleasantly fragrant. *Bractes*, a few of an unequal size at the insertion of each pedicel. *Calyx* of five, cordate, pointed leaflets; the length of the tube of the corol. *Corol* tubular; *tube* short; *border* large, flat; *divisions* roundish-obovate. *Nectary* cylindric, surrounding the germs; *mouth* five-notched. *Filaments* inserted on the mouth of the tube of the corol, very thick, with a large round pearl coloured projection behind the insertion of the arrow-shaped *anthers*, which are woolly on the fore side. *Germs* two, &c. as in the former species. *Style* single, hairy. *Stigma* headed, and adhering firmly to a projection in the fissure which forms the barb of the Anthers. *Follicles* oblong, large, being about six inches long, and above two in diameter at the thickest part, and what is most extraordinary, the only few seed vessels which I have yet met

with, divided spontaneously into four parts or equal valves, when dry. *Seeds* numerous, comose, &c. with inverted embryo, as in the other *Apocineæ*.

14. E. *parviflora R.*

Twining. *Leaves* lanceolar. *Panicles* terminal, and axillary, brachiate. *Tube* of the corol gibbous toward the base; *segments* of the border linear-falcate. *Nectary* an entire ring round the germ.

A stout perennial species, a native of the northern Circars.

15. E. *clavata, R.*

Twining, dichotomous. *Leaves* broad, lanceolate, entire, villous underneath. *Panicles* axillary, dichotomous. *Tube* of the corol clavate, with the *segments* of the border falcate. *Anthers* linear, and within the mouth of the tube.

A native of the *Moluccas*, and of all the species known to me, this most resembles *E. Dichotoma*, but differs sufficiently in the length of the tube, the segments of the border of the corol, and the stamina, to authorise its being considered a distinct species.

PLUMERIA. Schreb. gen. N. 422.

Calyx 5-parted. *Corol* infundibuliform. *Germ* 2 celled; *cells* many seeded, attachment interior. *Follicles* reflex. *Seeds* inserted into their proper membrane.

P. acuminata of the *Banksian herbarium.*

Arboreous. *Leaves* cuneate-lanceolar, acuminate, those of the branchlets obtuse. *Racemes* corymbose.

Flos convolutus. Rumph. Amb. 4. *t.* 38 *good.*

Hind. Gool-achin.

This very elegant, small tree does not appear to be a native of this part of *India*, I have only found it in gardens; but there it is very common, which shews it to be of

considerable antiquity. Every part is full of tenacious, white juice, which exudes plentifully on being wounded. *Trunk* crooked, from six to ten feet high. *Bark* rough. *Branches* numerous, three-forked, swelled towards the ends; the height of the whole tree fifteen or twenty feet. *Leaves* crowded about the end of the branchlets, petioled, wedge-lanceolar, acute, entire. Many straight veins run towards the circumference, and are lost in another waved vein, which surrounds the leaf within the margins; they are smooth on both sides; about a foot long and three inches broad. *Petioles* round, with a small channel on the upper side, which ends below in a hollow filled with blackish conical glands. *Peduncles* subterminal, having several corymbiform racemes, in a verticelled order. *Flowers* numerous, succeeding one another for a great length of time; on the outside they are tinged red; the inside pale yellow below, and white towards the base of the segments; diffusing a pleasing fragrance, chiefly during the night. *Calyx* of five, small, roundish, fleshy leaves. *Corol* funnel-shaped, with a large imbricated border; *divisions* obovate. *Stamens* in the bottom of the tube. *Filaments* short. *Anthers* sagittate. *Follicles* pendulous, horizontal, very rigid. In thirty-five years I have only met with them once, so rarely does this tree ripen its seed.

TABERNÆMONTANA.

Contorted. Corol funnel-shaped. *Follicles* two, recurved. *Seeds* several, immersed in a pulpy aril, and alternately attached to the two margins of the follicles.

1. T. *dichotoma. R.*

Subarboreous, dichotomous. *Leaves* oblong, and linear oblong, with deverging veins. *Racemes* simple or compound, single, or in pairs from the forks.

A native of Ceylon and Malabar and introduced into the Botanic Garden at Calcutta from the former place, by

the Rev. Dr. John; where it flowers during the greater part of the year, but chiefly during the rains.

Trunk short.

Branches numerous; spreading much in every direction, dichotomous, the old ones with smooth olive coloured bark; the young ones green, round, and very smooth. *Leaves* opposite, petioled, oblong, and linear-oblong, entire, rather obtuse, of a firm texture, and polished on both sides; veins parallel, diverging from the rib; length from four to eight inches and from one to two broad. *Petioles* short, and united in a cup like a stipulary ring which completely embraces the branchlets. All these parts very resinous. *Racemes* simple or compound; single or in pairs, in the extreme divisions of the branchlets; often as long as the leaves, polished, bright green. *Flowers* rather remote, long-pedicelled, large, white, scarcely fragrant. *bractes* scarcely any. *Calyx* five-parted; *divisions* short, semilunar, resinous. *Coral*; *tube* long, gibbous near the base, much contracted above the stamina; *Border* of five, contorted, falcate segments. *Filaments* short, inserted into the tube of the corol near the middle. *Anthers* sagittate. *Germs* two, closely united; single, one-celled; *ovula* numerous, attached to a two-lobed receptacle, on the inner side of the cell. *Style* two-thirds shorter than the tube of the corol, two-lobed. *Stigma* large, with a tapering bifid apex. *Follicles*, it is rare to find more than one of the two come to maturity, they are recurved with the back considerably concave; and very gibbous on the opposite side, where an elevated rib runs along each side of the suture; obtusely pointed, pretty smooth; when ripe of a bright orange colour, four or five inches long, and nearly two in diameter where thickest. *Seeds* numerous, of an irregular, cuneate-oblong shape, with a deep longitudinal groove on one side; each enveloped in its own proper, scarlet, pulpy aril and inserted along the side of the two margins

of the suture by the small end of the aril, which is again attached by a broad umbilical cord to the centre of the longitudinal groove just mentioned. *Perisperm* in pretty large quantity, rather soft, and of a pale bluish white colour. *Embryo* nearly as long as the seed, with the two cordate cotyledons lodged near the thick end; and the long, almost straight cylindric radicle directed to the small end where the aril was attached to the margin of the follicle; *(relative centripeta of Gærtner.)*

An incomplete drawing, and description of this tree, was sent to the Honourable the Court of Directors under the name of *Cerbera dichotoma,* and numbered 1541. At that time I had not seen the fruit but since my return to India, I have met with it in a perfectly ripe state and find the plant must now be referred to the genus *Tabernæmontana* where, I think, it forms a new species.

2. T. *coronaria. R.*

Shrubby, dichotomous. *Leaves* lanceolar, waved, smooth. *Penduncles* from the divisions of the branches few flowered. *Calyx* 5-toothed. *Follicles* recurved, many-seeded.

Nerium *coronarium. Hort. Kew.* 1. *P.* 297.

Nandi-ervatum major, and minor. *Rheed. Mal.* 2. *t.* 54. *and* 55. I take to be the double and single varieties of this.

Firki-tugur the Hindoo name of the single flowered, and *Bura-tugur* of the double flowered.

Jasminum zylanicum. &c. *Burm. zeyl.* 129. *t.* 59.

Flos Manilhanus. Rump. Amb. 4. t. 49. appears to be the double variety.

A flowering shrub common in gardens over India. It is in flower the greater part of the year but rarely ripens its seed. I mean the double sort, the single ripens them frequently.

Trunk trifling, but numerous, two-forked branches, with a pretty smooth light ash-coloured bark. The whole shrub is about 6 or 8 feet high. *Leaves* opposite, short-petioled, spreading, lanceolar, smooth, shining, deep green; margins waved a little, with elevations above the veins; four or six inches long. *Stipules* within the leaves, resinous as in most species of *Gardenia.* *Peduncles* generally solitary, from the divisions of the branchlets, one or two inches long, from one to eight flowered. *Flowers* pure white, and delightfully fragrant during the night. *Calyx* five-toothed. *Corol* funnel shaped; *tube* contracted towards the mouth, and crowned with small yellow glands, (which brings it in this respect near to Nerium;) *border* five-parted; divisions obliquely ovate, and curled at the margins. *Stamens* rather below the middle of the tube. *Germs* two. *Style* short. *Stigma* single, headed with its slender apex, bifid. *Follicles* spreading; and recurved singly, from one to three inches long. *Seeds* three to six, irregularly oblong, dark brown, and striated; each enclosed in its own proper, fleshy, deep red pulpy aril. *Perisperm* conform to the seed; with the cordate *cotyledons* lodged in its thick end, and the long, cylindric, straight radicle, directed to the small end.

Note. This pulp seems fit for yielding a very beautiful colour. The double flowered variety is much more common than the single and is more beautiful; few shrubs surpassing it.

3. T. *Crispa. R.*

Shrubby, dichotomous. *Leaves* oblong, pointed, waved, smooth. *Peduncles* from the divisions of the branches, three or four flowered. *Calyx* five-leaved. *Follicles* three or four seeded.

4. T. *alternifolia. Willd.* 4. 1246.
Curutu-pala. Rheed. mal. 1. *P.* 83. *t.* 46.

This is a large, ramous shrub. I have only found it in the Botanic Garden of the Company at Calcutta, where it flowers during the rains.

Trunk short; *branches* numerous, two-forked; *bark* ash coloured; *young shoots* dotted. *Leaves* opposite, cross-armed, short-petioled, reclined, oblong, pointed, waved, pale green, but smooth on both sides; from 4 to 8 inches long and two or three broad. *Peduncles* from the divisions of the branchlets, solitary, few-flowered. *Flowers* pure white, fragrant. *Calyx* five-leaved, *leaflets* cordate, smooth, falling. *Corol; tube* a little gibbous above the middle, and there the stamens are lodged; *divisions* of the border curled. *Germs* two, each one-celled, containing four vertical rows of *ovula*, two on each side, attached to the inner elevated margins of the cell. *Follicles* oblong, three-six-seeded. *Seeds* surrounded with their proper pulpy arils, &c. &c. as in *T. Coronaria*.

I never saw this species with double flowers, nor is it so ornamental as even the single flowered. *T. Coronaria*. To distinguish it from that species, attend to the calyx, and follicles chiefly, the leaves being in this also opposite, made me change the Linnæan specific name *alternifolia*, for *crispa* on account of its curled petals.

T. corymbosa. R.

Leaves petioled, oblong. *Corymbs* terminal, ample, decompound, all the primary divisions dichotomous. *Anthers* inclosed.

A native of the Moluccas.

T. parviflora. R.

Shrubby, dichotomous. *Leaves* broad-lanceolate, taper, obtuse pointed. *Peduncles* in pairs at the forks, few-flowered. The five segments of the calyx ensiform.

This small shrub, was sent from Sumatra to the Bota-

nic Garden at Calcutta, where it flowers during the rainy season; but has not yet perfected its seeds in Bengal.

Stem erect, slender, round, and smooth, soon dividing into a few, slender, dichotomous branches, the whole height rather under three feet. *Leaves* opposite, short-petioled, broad-lanceolate, taper, obtuse-pointed; *margins* waved, but entire, smooth on both sides, length from two to six inches and the breadth from one to two. *Peduncles* generally in pairs from the forks of the branches, few-flowered. *Flowers* pedicelled, small, white. *Pedicells* as long as the peduncles. *Bractes* few and small. *Calyx* five-toothed. *Divisions* erect, ensiform. *Corol* infundibiliform; *tube* widest close to the mouth, and there the sessile *anthers* are lodged. *Border* of five falcate, linear, obtuse *segments*, which are shorter than the tube. *Germ* two-lobed; *style* of two, coalesced portions, and sufficiently long to elevate the *stigma* even with the anthers.

T. recurva. R.

Shrubby, dichotomous. *Leaves* broad-lanceolar, smooth. *Peduncles* in pairs at the forks, recurved, corymbiform. *Calyxes* five-cleft. *Anthers* in the mouth of the clavate tube.

A native of Chittagong from whence it was sent to the Botanic Garden at Calcutta by Dr. Buchanan, where it blossoms in March and April.

Trunk tolerably straight, but short, soon dividing into several, dichotomous *branches*. *Bark* smooth. *Leaves* opposite, short-petioled, broad-lanceolate, obtuse-pointed; smooth on both sides; length from two to six inches. *Peduncles* in pairs from the divisions of the branchlets, short, recurved, each ending in a dichotomous corymb of many, long, white, drooping flowers. *Bractes* lanceolate. *Calyx* five-cleft to very near the base; *divisions* linear, unequal, smooth. *Corol*; *tube* many times longer than the calyx, widened at the mouth, where the an-

thers are lodged. *Border* of five, large, wedge-shaped, very obliquely, smooth, entire segments. *Fil* short. *Anthers* sagittate, lodged just within the tube of the corol. *Germ* two lobed. *Style* nearly as long as the tube of the corol. *Stigma* bifid, issuing from the apex of an enlarged glutinous gland.

T. persicariafolia. Willd. 1. 1246.

Arboreous. *Leaves* opposite, lanceolar. *Panicles* terminal and axillary, small, dichotomous. *Follicles* many-seeded.

A small tree, with smooth opposite and dichotomous branches and branchlets. *Flowers* rather small, pale yellow.

PENTANDRIA DIGYNIA.

CEROPEGIA. Schreb. geu. n. 431.

Calyx five-toothed. *Corol* with the divisions of its borders converging. *Nectary* surrounding the fructification, protruding five sterile filaments. *Follicles* linear. *Seed* comose.

1. C. *Candelabrum. Willd.* 1. 1275.

Perennial, twining, smooth. *Leaves* ovate-oblong. *Umbells* pendulous.

Njota-njoden-valli. *Rheed. mal.* 9. *t.* 16.

Native of Malabar. It flowers in the rainy season in the Botanic Garden at Calcutta.

2. C. *bulbosa. Willd.* 1. 1275 *R. Corom. pl.* 1. *N.* 7.

Root tuberous, perennial. *Stems* herbaceous, twining.

Leaves obovate, short-petioles, fleshy. *Umbels* short-peduncled, few-flowered.

Teling. Manchi, viz. good Mandu.

It grows amongst bushes in hedges, &c. on dry, barren, uncultivated ground and flowers during the hot season.

Root tuberous, a little flattened like a turnip, with several fibres from its base ; it is about as large as a small apple. *Stems* twining, herbaceous, smooth, succulent ; from 2 to 4 feet long. *Leaves* opposite, short-petioled, obovate, with a small point, entire, fleshy, size various. *Umbels* lateral, length of the leaves, peduncled few-flowered, direction various. *Flowers* pretty large, erect ; *tube* greenish ; *border* purple. *Calyx* five-toothed ; *toothlets* acute, permanent. *Corol* one-petalled ; *tube* swelled at the base, contracted about the middle, enlarging from thence into a bell-shaped mouth. *Border* five-parted ; *segments* linear, downy, purple, erect, tops united, gaping at the sides. *Nectary ;* its body is already described in the preliminary observations ; from each of its five divisions, rises a curved tapering, filiform, sterile filament, of about half the length of the tube. *Anthers* five pair, resting on the black pointed angles of the *common stigma.* (*Corpus truncatum.*) *Germs* two united. *Styles* two, united, short, thick. *Stigma* common large, peltate, five-cornered, before the flower opens these corners adhere firmly to five, incurved, yellow glandular parts of the nectary, and between them are the anthers. It requires some force to separate them, to have a view of the anthers ; when the flower is afterwards fully blown, they separate of themselves, the anthers are then seen poised, as it were, on the five black, pointed angles of the stigma. *Follicles* two, slender, singly about 3 or 4 inches long.

Every part of this plant is eaten by the natives, either raw or stewed in their curries. The fresh roots taste like a raw turnip.

3. C. *acuminata. Willd.* 1. 1276. *R. Corom. pl.* 1. *N.* 8.

Root tuberous, perennial. *Stems* herbaceous, twining. *Leaves* ensiform, succulent.

Teling. Commoo-madu.

ASCLEPIAS.

Contorted. Calyx five-toothed. *Corol* rotate, or salver-shaped. *Nectary* subcylindric, embracing the organs of the fructification. *Anthers* five pairs, attached to the five angles of the common stigma. *Follicles* two. *Seeds* comose.

The East Indian plants of this extensive family, belonging to the natural order *Apocinea* of Jussieu, are, with the exception of two or three species, uniformly twining perenials. The *Leaves* always opposite; inflorescence sub-axillary or rather laterifolius umbells. The *Calyx* and *Corol* five-parted. The *nectary* a subcylindric pentagon, more or less deeply divided into five, lanceolate, lamellated segments. The organs of the *fructification* consist of five pair, of one-celled *anthers* and as I cannot subscribe to Brown's opinion, I must say at all periods attached to the circumference, or when angular, to the five angles of the *common stigma*, and furnished with a *fecundating fluid*, instead of pollen. The *germs* two, or very perfectly two-lobed, superior, each crowned with its proper *style*, but the two are often pretty firmly united, and end in a single large, roundish, or pentagonal, spongy body, which I call the *common stigma*, (Jacquin's *tuberculum staminiferum*, and Cavanille's *radix stamineum*) and gives the germs nearly as great a claim to t he first order of this class, as the other parts of the pistillum do to the *second*. This body is in some parts firmly attached to the interior lamella of the five segments of the *nectary*, and that organ being united to the *Corol*, the whole falls off in one body. Several of our In-

dian plants of this order hitherto consigned to *Pergularia*, *Periploca*, *Cynanchium*, and *Apocynum*, fall into this genus; nor can I contrive any possibility of placing them elsewhere, so exactly alike are all the essential parts of their *generic character*, which appears to me as completely *Gynandrous*, as any of the *Orchideæ*.

Section 1*st. Corol rotate.*

1. A. *gigantea. Willd.* 1264.

Shrubby, hoary. *Leaves* stem clasping, oblong, obovate, downy underneath. *Umbels* simple.

Madorus *Rumph. amb.* 7. *t.* 14. *f.* 1.

*U*rka is the Sanscrit name of the lilac variety, and *Ulu*rka the name of the white.

Ericu. *Rheed. mal.* 2. *t.* 31 *the lilac*, and *Bel-ericu*, 31 *the white.*

Nella-jeberoo, the Telinga name of the lilac flowered variety, and Zella-jeleereo of the white flowered. *Beng.* Ak*u*nd*a*, and Swetak*u*nd.

This is one of the most common, large, ramous shrubs over *India*. It is in flower, and has ripe seed all the year round. It grows every where, but chiefly about old walls, hedges, or ruinous places.

Stem often as thick as a man's leg, or thigh, sub-erect ramous. *Bark* ash-coloured. *Young shoots* covered with soft woolly down. *Leaves* opposite, decussate, sub-sessile, embracing the stem, broad, wedge-form, bearded on the upper side where they end in the petiole; the upper surface pretty smooth; the under one, covered with a white woolly pubescence, from four to six inches long, and from two to three broad. *Umbels* generally simple, though sometimes compound, peduncled. *Peduncles* round, covered with the same woolly substance, as the leaves and young shoots, and issuing alternately from between the opposite leaves, nearly erect, half the length of the

leaves. *Involucres* several oblong, pointed scales. *Flowers* large, beautiful, a mixture of rose colour, and purple. *Calyx* five-parted. *Corol* flat.

The white flowered variety differs only from the lilac flowered, in the colour of the flowers.

A large quantity of an acrid, milky juice, flows from wounds made in every part of these shrubs; the natives apply it to various medicinal purposes; besides which, they employ the plant itself, and the preparations thereof to cure all kinds of fits; Epilepsy, Hysterics, Convulsions from Coitu immediately after bathing; also Spasmodic disorders such as the lockedjaw, Convulsions in children, Paralytical complaints, Cold sweat, Poisonous bites, and venereal complaints. Good charcoal for gunpowder is said to be made of it. A fine sort of silky flax is in some parts prepared from the bark of the young shoots. A large, beautiful, inactive species of Gryllus feeds upon the leaves.

2. A. *sussuela. R.*

Succulent and smooth. *Leaves* petioled, oblong, pointed succulent smooth. *Peduncles* few-flowered. *Calyx* five-leaved. *Corols* flat, fleshy, five-lobed. *Genitalia* short, and obconical.

Corona Ariodnes. *Rumph. amb.* 5. *t.* 182.

A native of the Moluccas and by far the largest flowering species I have yet met with; when expanded it is nearly three inches in diameter.

3. A. *acida. R.*

Leafless. *Umbellets* terminal simple.

Soma-lata in Sanscrit, rendered Soon by Wilkins in his translation of the *Bhagavut Geeta*, p. 80, and note 42.

Cynanchium viminale. *Willd.* 1. 1252.

Teling. Tiga-tshomoodoo.

Beng. Bramee or shom-lota.

A native of hedges, forests, &c. but by no means common.

Stems twining, woody. *Branches* and *branchlets* most numerous, cylindric and smooth; particularly the youngest shoots, and they are generally pendulous when not supported; naked and succulent, like those of *Euphrobia Tirucalli*. *Leaves* scarcely the rudiments of any to be seen. *Flowers* small, pure white, fragrant, pedicelled, collected round the extremities of the branchlets, in the form of elegant, small, simple umbellets. *Calyx* small, five-parted, star-like. *Corol* flat seemingly five-petioled, as the fissures are continued close to the base. *Nectary* enlarged at the base in form of a cup, on which rests five, large fleshy, incurved, undivided, white segments. *Stamens* and *pistil*, as in the germs. *Follicles*, I never saw them.

This plant yields a larger portion of very pure milky juice than any other I know; and what is rare, it is of a mild nature, and acid taste. The native travellers often suck the tender shoots to ally their thirst.

4. A. *racemosa*. *R.*

Twining to a vast extent. *Leaves* round, cordate. *Genitalia* oblate. *Follicles* linear oblong, obtuse.

A native of various parts of India. Flowering time, in Bengal, the month of May.

Stems, and *old branches* woody, covered with dark, scabrous bark, twining up, and over trees of a large size; young shoots round, smooth, bright green. *Leaves* opposite, petioled, round-cordate, entire, acuminate; *Lobes* large, and rounded, smooth on both sides; some conic glands at the base, which become brown by age; length, from 3 to 6 inches and nearly as broad. *Petioles* shorter than the leaves, round, smooth. *Racemes* laterifoliate, peduncled, smooth, nearly erect, continuing to lengthen as the spirally disposed flowers expand. *Pedicles* diverging, long, round, and smooth. *Flowers*

small, smooth. *Calyx* five-cleft; *segments* rounded. *Corol* perfectly rotate, most slightly contorted; segments ovate, speckled with ferruginous marks, on a pale yellow ground. *Nectarium* very short, the five exterior lamina of its five divisions obversely crescent-shaped. *Follicles* large, linear-oblong, obtuse, smooth. *Seeds* ovate, thin membrane-margined. *Coma* large. *Integument* single, a rather thick, light brown. *Perisperm* conform to the seed, thin, white. *Embryo* straight, inverse. *Cotyledons* cordate, thin, five-nerved, large and nearly dividing the perisperm into two. *Radicles* clavate, pointing to the coma, which points to the apex of the follicle.

5. A. *asthmatica. Willd.* 1. 1270.

Leaves petioled, long-cordate, downy underneath. *Umbels* axillary, compound. Calycine. *Segments* ensiform.

Beng. *Unta*-mool.

Teling. Kaka-palla.

This is a perennial, twining species; it is common almost every where, and delights most in a light sandy soil. It flowers during the cold season.

What is *A. alixicaca of Jacquin. See Willd.* 1. 1270? I suspect it is the same or a variety. We have one variety in the Botanic Garden at Calcutta with the young shoot peduncles and petioles tinged with red. *Root* of many, long, thick, whitish, or light ash-coloured, fleshy fibres, issuing from a small, hard, ligneous head. *Stems* several, twining, slender, round, from 6 to 12 feet long; *young parts* downy. *Leaves* opposite, petioled, linear, cordate-ovate; those near the extremities are narrower, all are entire; above smooth; below downy; from two to three inches long. *Petioles* about half an inch long, channelled. *Umbels* solitary, axillary, and alternate, generally compound. *Peduncles*, and *pedicels* twice the length of the petioles, round, downy. *Involucres* lanceo-

late. *Flowers* numerous, small, colour a mixture of bad yellow, and orange. *Calyx ; divisions* lanceolate, very acute. *Corol* flat ; *divisions* oval. *Follicles* lanceolate, spreading, three or four inches long, and about two in circumference.

On the coast of Coromandel, the roots of this plant have often been used as a substitute for Ipecacuana. I have often prescribed it myself, and always found it answer as well as I could expect Ipecacuana to do ; I have also often had very favorable reports of its effects from others. It was a very useful medicine with our Europeans who were unfortunately prisoners with Hyder Ally, during the war of 1780, 81, 82 and 83. In a pretty large dose, it answered as an Emetic ; in smaller doses, often repeated, as a Cathartic, and in both ways very effectually.

I had made and noted down many observations on its uses, when in large practice in the General Hospital at Madras in 1776, 77 and 78, but lost them, with all my other papers, by the storm and inundation at and near Coringa in May 1787. I cannot therefore be so full on the virtues of this valuable, though much neglected root, as I could wish. I have no doubt but it would answer every purpose of Ipecacuana.

The natives also employ it as an Emetic ; the bark of about three or four inches of the fresh root, they rub upon a stone, and mix with a little water for a dose ; it generally purges at the same time.

Note by Dr. P. Russell.

" Dr. Russell was informed by the Physician General at Madras, (Dr. J. Anderson,) that he had many years before known it used, both by the European and Native Troops with great success in the dysentery which happened at that time to be epidemic in the camp. The store of Ipecacuana had it seems, been wholly expended, and

Dr. Anderson finding the practice of the black doctors much more successful than his own, acknowledged, with his usual candour, that he was not ashamed to take instruction from them, which he pursued with good success; and collecting a quantity of the plant which they pointed out to him, he sent a large package of the roots to Madras. It is certainly an article of the Hindoo materia medica highly deserving attention.

6. A. *tunicata, R.*

Leaves long-cordate, smooth. *Stipules* short-petioled, broad-cordate. *Umbels* simple. *Nectary* double.

Periploca tunicata. Willd. 1. 1252. *Retz.* 3. *obs.* 2. *N.* 35.

Hind. Kallia-luta.

Beng. Chagul-pati.

A pretty large, twining shrub, a native of the hedges, &c. Flowering time, the rainy season. Its milky juice is particularly gummy.

Leaves opposite, petioled, cordate, with large, rounded, posterior lobes; pointed, entire, both sides smooth; from 2 to 4 inches long. *Petioles* half the length of the leaves, stem-clasping. *Stipules* two in the same axil, none in the other opposite one; they are short-petioled, broad-cordate, pointed, smooth, about an inch long each way. *Umbels* solitary, small, simple, few-flowered, occupying the axil opposite to the stipules. *Flowers* small, rusty colour. *Corol* flat. *Nectary* double. *Exterior* tubular, gibbous, considerably large, and completely embracing the inner, and the fructification; towards the apex plaited, and contracted; *mouth* ten-toothed, the alternate ones very large, and emarginate. *Interior* as in the genus. *Follicles* lanceolar, flat on the inside, with sharp margins, black, deeply and irregularly furrowed.

7. A. *microphylla, R.*

Leaves cordate, with a minute point, smooth and

fleshy. *Racemes* lateral, few-flowered, scaly with branches.

Parparam. *Rheed. mal.* 9. *t.* 17.

Teling. Poola-palla.

A long, small, delicate twining perennial, a native of hedges, &c. Flowering time, the wet season. It is probably *Cynanchium parviflorum* of the *Banksian herbarium.*

Leaves opposite, petioled, cordate, with a minute acute point, smooth, shining, entire, fleshy ; from half an inch, to an inch long. *Racemes* lateral, sessile, small, few-flowered. *Bractes* lanceolate. *Flowers* small, stellate, long-pedicelled, many of them without stamens, or pistil. *Corol* flat. *Follicles* as in the last two species, but smaller.

8. A. *volubilis. Willd.* 1269.

Leaves petioled, broad-ovate, pointed, smooth. *Fructification* with nectary, turbinate, and truncate. *Umbels* simple.

Watta-kakacodi. *Rheed. mal.* 9. *t.* 15.

Teling. Doodee-palla.

Beng. Tita-kunga.

A large woody, twining species ; common in hedges, thickets, &c. Flowering time, the wet season. *Bark* of the woody parts smooth, ash-coloured.

Leaves opposite, petioled, broad-cordate, but not sinuate at the base, pointed, entire, smooth ; from 3 to 4 inches long. *Petioles* from 1 to 2 inches long. *Umbels* lateral, or axillary, simple, many flowered. Flowers numerous, green, with pedicels as long as the peduncle. *Corol* flat. *Nectary* turbinate, truncate. *Anthers* reflected over the common stigma. *Follicles* horizontal, obtuse, about three or four inches long, and four in circumference.

9. A. *pendula, R.*

Leaves oblong, veinless, very smooth, and fleshy. *Um-*

bels simple, many flowered. *Nectaries* protruding five horns at the base.

Nansjera-patsja. *Rheed. mal.* 9. *t.* 13.

A native of the mountainous parts of the Circars ; it flowers during the hot and rainy seasons.

Stems and larger *branches* woody, twining, running over trees, &c. to a great extent. *Branchlets* twiggy, and pendulous. *Leaves* opposite, oblong, smooth, shining, of a very firm, hard, fleshy texture, veinless. *Umbels* peduncled, lateral, solitary, pendulous with the branchlets many flowered. *Flowers* milk-white, fragrant, pendulous also. *Pedicels* as long as the peduncles. *Corol* flat, inside covered with a kind of silky down. *Nectary* stellate; O may represent one of its five parts much magnified. *Anthers* remarkably large, reflected over, and resting upon the *common stigma.* If taken out and examined before the flower opens, they are then found much swelled ; along the sharp edge there is a double line, which I conclude forms an opening for the prolific fluid to escape at, but in old flowers they are mere collapsed membranes. On dividing the plump ones I could readily press out a yellow fluid.

Note. This is the most favorable species I have met with for examining the structure, and contents of the *anthers* of this *Gynadrous* genus.

10. A. *annularia, R.*

Leaves petioled, cordate, pointed, smooth ; *nerves* and *veins* red ; *genitalia* sitting on a large annular receptacle.

Ada-kodien. *Rheed. mal.* 9. *t.* 7.

Teling. Palla gurgi.

It is a native of moist vallies. Flowering time, the wet season.

Stem twining, perennial. *Young shoots* round, and very smooth. *Leaves* opposite, petioled, cordate, deeply lobed at the base, pointed, entire, smooth on both sides, nerve

and veins red; on the upper side near the base are some small bristly points; from three to five inches long, and two or three broad. *Petioles* about two inches long. *Umbels* lateral, peduncled, simple, few flowered. *Flowers* large, the colour a beautiful mixture of red, green and white. *Calyx* five-leaved; *leaflets* ovate. *Corol* flat. *Nectary*, its base forms a large, fleshy, somewhat five-sided ring. *Filaments* twisted. *Anthers* very long, they hang down on the sides of the *common stigma*, which is here very large, of an oval form, composed of five lobes, with a pentagonal crown.

11. A. *suberosa, R.*

Bark of the woody parts suberose. *Leaves* petioled, cordate, downy. *Umbels* simple. *Corols* downy. *Fructification* globular. *Anthers* hornletted.

Cynanchium *reticulatum. Willd.* 1. 1258.

A large, twining, perennial species common in hedges, &c. over most parts of the coast of Coromandel. It flowers during the latter parts of the rains, and the cold season.

Stem, and old *branches* woody, twining; *bark* light ash-coloured, suberous, and cracking deep in various directions; *young parts* slightly downy. *Leaves* opposite, petioled, oblong, cordate, entire, acute, downy, particularly when young; two or three inches long, and one and a half or two inches broad. *Petioles* round, one half length of the petioles. *Umbels* lateral, simple, peduncled, about the length of the petioles. *Flower* numerous, small, star-form, greenish-yellow, scentless. *Corol; tube* scarcely any; *segments* of the border spreading; *margins* revolute, downy. *Nectarial* sheath surrounding the fructification, as in the genus, the whole small, and globular. *Anthers* oval, horned, bent up over the common stigma.

12. A. *pseudosarsa*, *R.*

Shrubby, twining, filiform. *Leaves* from ovate to linear, smooth, shining. *Spikes* axillary, sessile, imbricate. *Follicles* linear.

Ceropegia *tenuifolia*, *Linn. Mant.* 346.

Periploca *indica*. *Willd.* 1. 1251. when broad leaved.

Periploca *emetica*, the wild one. 1251. *Retz. obs.* 2. No. 34. when narrow leaved.

Naru-nindi. *Rheed. mal.* 10. t. 34. very good.

Ununta-mool of the Hindoos when the leaves are broad, and Sada-boari when narrow.

Palla-soucandee is the Telinga name for the narrow leaved parts, and Ghodie soucandee for the broad leaved.

It is one of the most common, twining shrubs on the Coast, Bengal, &c. grows equally well in every uncultivated soil, and in all situations. Flowers during the wet season.

Root long, and slender with few ramifications, covered with rust coloured bark, which possesses a peculiarly pleasant sort of fragrance, whether fresh or dried. *Stems* twining, diffuse, or climbing, woody, slender, generally from the thickness of a goose quill, to that of a crow quill, pretty smooth. *Leaves* opposite, short petioled, shape very various ; on the young shoots that issue from old roots, and lie on the earth they are linear, acute, and striated down the middle with white ; on the superior, and old branches, they are generally broad-lanceolate, even, sometimes ovate or oval ; all are entire, smooth, shining, and of a firm texture, the length and breadth very various. *Stipules* four-fold, small, on each side of each petiole, caducous. *Racemes* axillary, sessile, imbricated with flowers, and then with scales like bractes *Flowers* small ; outside green, inside a deep purple. *Calyx* divisions acute. *Corol* flat ; *divisions* oblong, pointed, inside rugose. *Nectary*, *stamens*, and *pistil* as in *Asclepias*. *Follicles* long, slender, spreading.

The Hind*oo*s make two species of this plant on account of the variety of the leaves; and I long thought they were so, till searching more narrowly, and taking up many of the roots. I then frequently found every variety of the leaves on different branches, issuing from the same root; which confirmed me in their being one plant. This is probably what Retz calls name *P.* Emetica but I am pretty clear Dr. König did not give it that name. To the best of my remembrance, he always conceived the broad leaved to be *P.* Indica, and the narrow to be *Ceropegia tenuifolia.* The plant sometimes employed as a substitute for *Ipecacuana,* is what König described under the name *Asclepias vomitoria;* a drawing and description of it will be found in my collections, viz. N. 608. *Asclepias asthmatica.* The roots, whether dried or fresh, have a pleasant, peculiar fragrance, which I cannot describe. They are known on the Coromandel coast by the name of country *Sarsaparilla;* and as such were often employed by our Medical Gentlemen. The natives employ them in medicine more than we do, particularly for the thrush in children. For this disorder the dried bark is reduced to a fine powder, and fried in butter; the proportion uncertain, as is often the case with Hind*oo* prescriptions, the quantities being in general guessed; about a dram of this is given, night and morning. They are also employed, with some other roots in the cure of *venereal* complaints.

13. A. *rosea, R.*

Leaves linear, smooth; *Racemes* longer than the leaves. *Corols* fringed with hairs. *Follicles* inflated.

Periploca *esculenta, Will.* 1. 1250. *R. Corom. pl.* 1. *N.* 11.

Periploca *esculenta* of König. See Suppl. plant. 168.

D*oo*ghdik*a*, (or milk plant;) is its Sanscrit name. *See* Asiatic Researches, 4. 268.

Beng. K*i*rui, D*oo*dhee, D*oo*dh-l*u*ta.

Teling. Doodee-palla.

It is a twining perennial; growing in hedges, and amongst bushes on the banks of water courses, pools, &c. *Leaves* deciduous during the dry season. In flower and foliage during the rainy season.

Root of filiform fibres. *Stem* and *branches* numerous, twining, round, smooth, running over bushes of considerable size. *Leaves* opposite, spreading, short-petioled, linear, tapering to a fine point, round at the base, entire, smooth, from four to six inches long, and about three eighths of an inch broad. *Racemes* lateral, long, few-flowered. *Flowers* large, beautiful, white, with a small tinge of rose-colour, and striated with purple veins, inodorous. *Nectary*, and *Stamens* as in the genus. *Follicles* oblong, inflated.

On this Coast I do not find the natives ever eat it, or apply it to any purpose whatever; cattle however eat it. Its elegant flowers render it well deserving of a place in the flower Garden. Every part abounds with milk, hence its names in various Asiatic languages.

14. A. *tenuissima. R.*

Filiform, smooth. *Leaves* linear-lanceolate. *Umbels* proliferous. *Genitalia* a truncated cone.

A native of Bengal.

Stem perennial, simple, of several yards in length, very smooth, about as thick as a pack thread. *Leaves* opposite, short-petioled, linear-lanceolate, base rather broad, and somewhat cordate, entire, plain, smooth on both sides; almost veinless; length from one to two inches, and a little more than a quarter of an inch broad. *Petioles* nearly round, about as long as the leaves are broad. *Umbels* solitary, from between the insertion of each pair of leaves, proliferous. *Peduncles* diverging, round, smooth, filiform. *Flowers* small, of a dull purple colour. *Calyx*

smooth, deeply cut into five, narrow, acute divisions. *Corol* rotate; *division* ovate, oblong, obtuse.

15. A. *parasitica. R.*

Parasitic, perennial, creeping. *Leaves* ovate-lanceolate, fleshy, drooping. *Umbels* simple, globular; *nectary* concave, stellate, protruding five ovate rays at the top.

This charming species is a native of the Sunderbund, or forest in the æstuary of the Ganges, where it grows on trees, creeping up, and over their trunks and branches to an extent of some fathoms; emitting roots from every part, which take fast hold of the parent tree. The first plant brought into the Botanic garden at Calcutta died when planted in the ground; but when tied to trees and their roots fixed in any cavity or fork where some humidity and nourishment was to be found, they grew well, though slowly, and blossomed during the hot season, and about the beginning of the rains in June. I have, however, reared them in common earth since.

Leaves opposite, petioled, retrofracted, ovate-lanceolate, acute, of a firm fleshy texture, and smooth on both sides; veins scarcely conspicuous above, and invisible underneath; from two to four inches long, and about one broad. *Petioles* short, round, ash-coloured, in fact, more like a part of a branch than a petiole. *Pedunc-les* solitary, interfoliaceous, round, smooth, about an inch and a half long, each supporting a most elegant, drooping, globular umbel, of the most beautiful, exquisitely fragrant, rather small, pearl-coloured flowers. *Calyx; leaflets* linear, scarcely half the length of the corol. *Corol* wheel-shaped, with the divisions cordate. *Nectary* concave, stellate, protruding five ovate, thick fleshy horns, or rays at the the top. *Stamens* as in the genus. The pericarp has not yet been found.

Section 2nd. Corols Salver-shaped.

16. A. *tinctoria. R.*

Leaves petioled, long-cordate. *Thyrses* axillary, solitary, glomerate; *mouth* of the *Corol* hairy. *Fructification* oblong.

Faroom-akkar. Marsden's history of Sumatra, page 78.

The natives of the coast of Coromandel have no name for it, the plant being foreign to them.

The following description, and the accompanying drawings were taken from plants raised in my Garden at *Samulcota*, the original of which Colonel Kyd sent me from the Company's Botanical Garden at Calcutta. With me it is a large twining shrub and has flowered during the hot and rainy seasons. It is quickly and easily propagated by layers, and cutings. I have not seen the pericarp.

Stem and *branches* twining, round. *Bark* of the woody parts ash-coloured; that of the young parts a little downy. *Leaves* opposite, petioled, horizontal, or rather reclining, cordate, or oblong-cordate, obtuse-pointed, a little downy, some-what bubbled, waved; from four to nine inches long, and from two to six broad. There are some small subulate glands on the upper side close to the base; these while young yield a waxy substance. *Petioles* round, from one to two inches long. *Stipules* none. *Thyrses* solitary, between the leaves, peduncled; as they become old glomerate, from their increasing length. *Flowers* very numerous, pedicelled, very small, yellow. *Bractes* minute. *Calyx* five-leaved; *leaflets* oblong, downy. *Corol* funnel-formed. *tube* short, gibbous; *mouth* nearly shut up with long silver-coloured hairs. *Border* horizontal. *Nectary*, &c. agree well with the general character of the genus.

The leaves of this plant yield Indigo, as mentioned by Mr. Marsden, and by Mr. Blake, in the first volume of the Asiatic Researches. I have also extracted it fromt them by hot water. The few experiments I have yet

made, do not enable me to say positively in what proportion they yield their colour; but it was of an excellent quality, and as the plant grows very readily from layers, slips, or cuttings, I think it very well worthy of being cultivated; particularly as it is permanent, like the *Nerium*, so that a plantation once formed, well continue for a number of years; and if we are allowed to draw a comparison between the leaves of this plant, and those of *Nerium tinctorium*, the quantity of colour they may yield will be in a larger proportion than from the common *Indigo* plant.

Since writing the above I have learned that this plant is a native of Cooch-bahar and I had some of the plants sent me from thence, also from Pegu, from whence I have likewise received plants.

Some more experiments I have made with the leaves, comfirm what is above related, not only respecting the quality of the Indigo, but also that the proportion is considerably greater than is obtained from *Indigofera tinctoria*. I have therefore warmly recommended an extensive cultivation thereof.

17. A. *echinata. R.*

Hairy. *Leaves* long-petioled, round-cordate, pointed, downy. *Umbels* proliferous, long-peduncled. *Follicles* covered with inoffensive prickles. *Fructification* clavate.

Cynanchium *extensum*. *Willd.* 1. 1257.

Pergularia. *Lamarck's illust.* t. 176.

Hind. Sagowani.

Teling. Jutuga.

This is also a perennial, twining species, a native of hedges, &c. flowering time the wet, and cold season; it abounds with milky juice. Tender parts hairy. The smell offensive. *Leaves* opposite, petioled, broad-cordate, with a deep sinuosity at the base; and semiorbicular lobes; entire, pointed, very downy, from two to

three inches long. *Petioles* nearly as long as the leaves. *Umbels* lateral, long-peduncled, sub-erect, often compound, many-flowered. *Involucres* few and minute. *Flowers* middle sized, of a dirty whitish colour, long-pedicelled, very fetid. *Corol* tubular; *tube* not quite half the length of the nectary; *apexes* of the five divisions long, very acute, and spirally incurved over the common stigma. *Anthers* spreading obliquely under the margins of the common stigma. *Follicles* hedge-hogged.

18. A. *geminata. R.*

Leaves ovate, downy. *Umbels* simple in pairs from alternate axils. *Nectary* a simple, five-toothed tube; common stigma subglobular.

Beng. Choota-doodee-luta.

This is also a large twining woody plant; a native of hedges. Flowering time the same as that of the last species. *Leaves* opposite, short-petioled, ovate, pointed; at the base a little cordate, entire, downy, from two to three inches long. *Umbels* lateral, simple, globular, paired, short-peduncled, thewhole being little more than the length of the petioles. *Flowers* numerous, small, yellow, with the globular apex of the white common stigma projecting in the centre; it looks like a fine pearl set in gold. *Calyx* five-leaved. *Corol*; tubular, downy; on the inside of the tube are five elevated ridges; *divisions* of the border spreading, triangular, acute. *Nectarial* sheath very simple, its apex reaches very little above the base of the common stigma, and is five-toothed. *Anthers* erect, affixed round the base of the common stigma, which is large, obovate, and two-thirds above the nectary.

19. A. *montana, R.*

Leaves oblong, pointed, smooth. *Umbels* lateral, solitary, proliferous. *Common stigma* globular.

This is another large, woody, twining plant; a native of mountainous tracts.

Leaves opposite, petioled, oblong, pointed, entire, smooth on both sides; about five inches long. *Umbels* solitary, lateral, compound, longer than the petioles. *Involucres* lanceolate, *Flowers* numerous, middle sized, whitish. *Calyx* five parted. *Corol* tubular; *tube* five-sided; on the inside are five pair of elevated, hairy ridges; *divions* of the border linear. *Nectary, stamens,* and *stigma,* as in A. *geminata.*

20. A. *longistigma. R.*

Leaves oblong. *Panicles* axillary, dichotomous; *divisions* of the corols linear; *common stigma* sublanceolate; and elevated above the nectary. *Stem* twining, woody, smooth; *young shoots* covered with dark rust coloured down. *Leaves* opposite, petioled, oval, waved, pointed, of a smooth, shining, firm texture; when very young covered with the same rusty down. *Petioles* short, generally crooked, covered with rust-coloured hairs. *Panicles* axillary, solitary, dichotomous, much shorter than the leaves. *Flowers* yellow, fragrant. *Corol* tubular; *divisions* of the border linear, a little twisted. *Stigma common,* green, oblong, pointed, elevated high above the nectary, only its base where the anthers are attached, is enveloped by the apex of the nectary.

21. A. *odorotissima. R.*

Bark of the woody parts suberose. *Leaves* cordate, soft, though not downy. *Nectary* and organs of fructification shorter than the tube of the corol, which is wooly within. *Stigma* subglobular.

Pergularia odoratissima. Smith's coloured figures of rare plants; fasc. 3. N. 16.

Pergularia *Minor B. M. N.* 755.

Flos Siamicus. *Rumph. Amb.* 7. *t.* 26 *f.* 1.
Mal. Tonki, or Tonkin.
Cynanchium *odoratissimum. Lour. Cochin. Ch.* 164.
Beng. Kunja-luta.
The Telingas have no name for it.
Eng. West coast creeper.

This plant is said to have been originally introducd into our gardens from Sumatra, where it continues to be carefully cultivated ; hence its English name, the West side of that Island on which we have our settlements, being generally called in India, amongst the English, the West coast.

For my part I cannot well consider this plant as a species of *Pergularia ;* it seems to uuite the character of this genus with that of *Asclepias.* The nectary which I believe is the most essential part, is that of the latter ; and the corol that of the former. At all events I consider it as a perfectly distinct species from P. *tomentosa ;* on account therefore of the exquisite fragrance of its flowers, I call it *odoratissima.* It is in flower from the beginning of the hot, till near the end of the wet season. The *Root* consists of many, horizontal, crooked, ramifications, covered with thick spongy bark.

Stems twining, woody. *Bark* deeply cracked, and corky on the old parts ; smooth, ash-coloured on the younger, jointed ; where the joints rest on the ground they strike root ; young, tender shoots slightly downy. *Leaves* opposite, petioled, cordate, waved, sharp-pointed, entire ; when young a little downy, about four inches long, and three broad. *Petioles* round, about an inch long. *Umbels* axillary, solitary, alternate, shorter than the leaves, many-flowered. *Bractes* lanceolate, *Flowers* middle-sized, yellow, or orange coloured, exeedingly fragrant. *Calyx* five cleft ; *divisions* waved, permanent. *Corol ; tube* gibbous, longer than the calyx ; inside covered with soft down. *Border* spreading ; *divisions* obliquely-ovate, a-

bove convex. *Nectary*, five bodies surrounding the pistillum, firmly united at the base but tapering from thence upwards into a sharp point. A single one detached, and veiwed side ways, is seen to be split more than half way down, and the exterior lamina is again half two cleft; the *interior* is concave, pressing upon the anthers, (yellow scales,) and receives from them a coloured impression. *Stamens* as in the genus. *Germs* two, ovate. *Styles* scarcely any; *common stigma* turbinate, round the upper part of which the five pair of yellow *anthers* are fixed to its five minute, dark brown, hairy angles. *Follicles* two, large, oblong, tapering to a point. *Seeds* numerous, imbricate, ovate, compressed, surrounded with a membranaceous wing, aud crowned with a long coma. *Receptacle* cylindric, spongy, free.

22 A. *pallida. R.*

Leaves long-cordate, smooth. *Umbels* short-peduncled, simple or compound; *tube* of the corol gibbous, length of the oval genitalia; segments of the border linear. *Follicles* smooth, lanceolate.

A native of various parts of India. Flowering time, the rainy season. It has a great resemblance to Vahl's *Pergularia purpurea*. The flowers are pale yellow, and not fragrant, or in a very small degree.

Stems ligneous, perennial, twining up and over trees of considerable size. *Young shoots* round, slender, and clothed with small, soft recurved hairs. *Leaves* opposite, petioled, long-cordate, entire, acute, smooth, but soft; three or four inches long, and less than one and a half, or two broad. *Petioles* an inch long, slender, villous, and slightly channelled. *Umbels* between the leaves, (lateri-folius,) very short-peduncled, often compound. *Pedicles* longer than the peduncles, villous. *Bractes* ensiform, one under the insertion of each pedicel. *Flowers* numerous, drooping, pale yellow, inodorous. *Calyx* five-parted, shor-

ter than the tube of the corol. *Corol; tube* gibbous, outwardly rugose, otherwise smooth, particularly within. *Border* of five, obliquely linear-oblong, revolute margined, spreading segments, which are at least twice the length of the tube. Their length and narrowness, and want of fragrance are the most obvious marks by which to distinguish this species from A. *odoratissima.*

Genitalia oval, just the length of the tube of the corol. *Common stigma* oblong, and almost entirely hid by the inner lamina of the nectary. *Follicles* lanceolate, smooth.

23. A. *laurifolia. R.*

Twining. *Leaves* petioled, oblong, polished. *Panicles* axillary, round, crowded. *Corols* subrotate; *genitalia* round-oval. *Follicles* slender, diverging horizontally.

A native of Chittagong, Tippera and the mountainous countries east of Bengal. Flowering time in the Botanic garden at Calcutta, the rainy season; the seeds are ripe in March.

Stem and *branches* shrubby, twining to a great extent. *Bark* brown, and every part replete with a milky juice which exudes from fresh wounds. *Leaves* opposite, petioled, oblong, entire, some obtusely cuspidate, some emarginate, of a firm, somewhat fleshy texture, polished on both sides; a range of dark coloured points where joined to the petiole; length from two to six inches, and one or two broad. *Petioles* one-fourth the length of the leaves round and smooth. *Panicles* laterifolius, solitary, globular, crowded, much shorter than the leaves. *Peduncles* about as long as the petioles, round, villous, with short, ferruginous hairs. *Pedicels* shorter but similar. *Bractes* minute, triangular. *Flowers* numerous, very small, pale yellow. *Calyx* five-toothed. *Corol* sub-rotate; *divisions* of the border obliquely-oblong, hairy on the inside; their margins meet only, and are not contorted as in most species of this natural order.

Mo. Bot. Garden.

Column of fructification, including the nectarium, scarcely differing from the other *Asclepiadiæ* will not therefore require to be particularized. *Follicles* slender, diverging horizontally, round, about as thick as a goose quill where thickest, and about five inches long, obtuse, dotted with small, scabrous specks, otherwise smooth, and brown. *Seeds* cuneiform. *Tuft* or *coma* very long, delicately fine, and white. *Integument* single, smooth, brown, adhering firmly to the perisperm which is in small quantity, and pale coloured. *Embryo* straight, inverse. *Cotyledons* linear-oblong. *Radicle* cylindric, pointing to the coma or tuft.

24. A. *micrantha. R.*

Twining, smooth. *Leaves* petioled, oval, rather obtuse, long, acuminate, tumid. *Panicles* sub-axillary, globular; *corols* companulate, stellate, villous. *Genitalia* subglobular. A large, perennial, twining, delicate plant, a native of *Hindoostan,* from the vicinity of Cawnpore. Colonel Hardwicke sent it to the Botanic Garden at Calcutta, where it blossoms during the rains.

25. A. *herbacea. R.*

Herbaceous, erect. *Leaves* petioled, oblong. *Umbels* compound. *Corols* with globular tube, which enclose the genitalia.

This is probably Sir William Jones's *Padmarka,* see Asiatic Researches. vol. 4. page 267. It is a native of the interior parts of Bengal, and was introduced into this garden by Dr. William Carey.

Root perennial, ligneous. *Stems* herbaceous, straight, with scarcely any *branches*. *Bark* of the oldest parts, light ash colour, of the young shoots green. *Leaves* opposite, petioled, oblong, entire, smooth on both sides, pale green, underneath more so; there are four or five minute bristly glands on the upper surface of the middle nerve near

the base. *Petioles* about an inch long, channelled, smooth. *Umbels* between the leaves, compound, peduncled. *Peduncles* short, round, smooth. *Pedicels* twice as long as the peduncles, one-flowered. *Bractes* subulate; mixed amongst the insertions of the pedicels. *Flowers* numerous, large, colour a most beautiful mixture of purple, red-purple and white. *Calyx* five-leaved; *leaflets* linear, acute, scarcely half the length of the corol. *Corol; tube* globular. *Segments* of the border three-angular, (not contorted.) *Nectarium* as in *Asclepias gigantea*, but shorter. Indeed the whole plant comes so exceedingly near that beautiful species, that by a common observer it may be taken for the same, though very different, particularly in having petioled leaves, and a globular tube the corol. *Follicles* two; but I have not seen any that were full grown.

Like *Asclepias gigantea*, and most other plants of the same order, every part is replete with much acrid, milky juice.

26. A. *tenacissima. R.*

Leaves long-petioled, exactly-cordate, fine-pointed, villous. *Panicles* drooping. *Genitalia* obovate. *Follicles* ovate-oblong, obtuse, tomentose.

This plant is a native of the mountains near Rajemahl, and the fibres of its bark are employed by the inhabitants to make their bow strings.

This elegant, and very useful species was first taken notice of in 1800 by Mr. W. Roxburgh, junior, growing wild on the above mentioned hills, and by him introduced into the Botanic Garden at Calcutta, where the plants thrive luxuriantly, blossom in April, and ripen their seed about ten months afterwards.

Stem perennial, twining over trees, &c. to a very great extent, and in general about as thick as a large ratan. *Branches* few, *young shoots* downy. From wounds there

exudes a milky juice, which thickens into an elastic substance, very like *Caoutchouc* and rubs out blacklead pencil lines as readily as that does, and I think may be reckoned an additional species of it. *Leaves* opposite, the pairs in luxuriant shoots (fit for flax,) very remote, petioled, exactly cordate, acute-pointed, entire, very soft, with much fine down on both sides; general length from four to six inches, and from three to four broad. *Petioles* round, downy, from two to four inches long. *Panicles* interfoliaceous, large, drooping, composed of alternate, drooping branches, of numerous, small umbellets, of beautiful greenish yellow flowers. *Bractes* minute, two or three under the insertion of the fascicles of flowers which compose the umbellets. *Calyx* deeply five-cleft; *divisions* rather more than half the length of the tube of the corol, and downy on the outside. *Corol* salver-shaped. *Divisions* of the border obliquely oval, with apices rounded, greenish toward the centre, with the exterior half yellow. *Column* of *fructification* short-clavate, about as long as the tube of the corol, with the white apex of the common stigma naked. *Follicles* ovate-lanceolate, obtuse, nearly round, with a groove on the inside, clothed with much soft, velvet-like green down; about six inches long, and from four to five in circumference where thickest. *Seeds* numerous, obovate, thin, with a broad membranaceous margin, and long soft silky pappus.

The bark of the young luxuriant shoots yields a large portion of beautiful fine silky fibres, with which the mountaineers of Rajemahl make their bow strings, on account of their great strength, and durability.

During the rains, they cut the shoots into lengths at the insertion of the leaves, peel off the bark, and with their nails, or a bit of stick on a board, remove the pulpy part. A person accustomed to this work, will, I am told, clean as much as six pounds of the fibres in one day.

These fibres, and those of the bark of the Malay plant

Battang-callooee, or *poolas* (*Urtica tenacissima, R.*) are by far the strongest fibres which I have met with in the vegetable kingdom, far exceeding those of the leaves of my *Sanseviera Zeylanica*. A line made of common hemp, for a standard, broke with 158 pounds when dry, and 190 when wet; the average of several trials. A similar line of this substance broke with 248 when dry, and 343 when wet, while one of *Battang-callooee* broke with 240 when dry, and 278 when wet.

27. A. *tingens. Buch.*

Leaves cordate. *Racemes* spiral, sub-axillary. *Fructifications* cochleari-cylindric. *Stigma* oval, crowning the tube of the corol.

A large, twining, shrubby plant, brought from Pegue to the Botanic Garden at Calcutta, by Dr. Buchanan. Flowering time the rainy season; seed ripe the May following.

Stem twining, woody, with numerous, twining, smooth branches, extending far over whatever supporters they meet with. *Bark* pretty smooth, when young brownish; when old, ash-coloured. *Leaves* opposite, petioled, cordate, entire, pointed, smooth on both sides, from three to six inches long, and from two to four broad. *Petioles* about an inch long, channelled, smooth. *Umbels* sub-axillary, short-peduncled, compound. When they begin to blossom, the inflorescence is a perfect umbel, but becomes a long, shining, spiral raceme. *Pedicels* rather longer than the peduncles, one-flowered, smooth, diverging in all directions. *Flowers* numerous, pale yellow or cream colour when they first expand, but grow gradually darker. *Calyx* to the base five-cleft. *Corol; tube* as long as the fructification; on the inside run five double ridges, which are ciliated with short brown hairs. *Border* expanding; *divisions* obliquely oval. *Nectary* as in the genus, with the cordate divisions of its mouth covering the stamina, and

lower part of the stigma. *Stamina ; receptacles* affixed to the base of the stigma. *Anthers* nearly erect. *Style* single. *Stigma* globular, smooth, pearl-coloured, half hid in the mouth of the tube, round its underside ten pits are found, corresponding with the ten anthers. *Follicles* ovate-lanceolate, spreading, smooth, and fleshy, length about four inches, and one in diameter where thickest.

Dr. Buchanan informed me that from the leaves of this plant, the Burman people prepare a green dye. It is probable that those people forgot to inform the Doctor that it was necessary to dye the cloth yellow, either before or after the application of the colour prepared from the leaves of this plant ; in which case it will be the second species of *Asclepias* described, and figured by me, which yields Indigo; though, for my own part, I have not succeeded in procuring that material from the leaves.

28. A. *pulchella. R.*

Shrubby, twining. *Leaves* long-petioled, round-cordate acuminate, smooth. *Racemes* long-peduncled ; *genitalia* subcylindric, with the five exterior *lamina* of the nectary long, and subulate ; converging into an open dome high over the common stigma.

Ada-kodien. Rheed. mal. 9. *t.* 7. would be a tolerably good representation of this elegant plant, if the fascicles of flowers were long-peduncled.

It is an extensive, perennial, twining species, a native of the forests of Silhet, where it is called *Kulum.* Flowering time, the rainy season.

Stems and *branches* twining ; young shoots perfectly smooth and deep green. *Leaves* opposite, long-petioled, cordate, entire, smooth, acuminate, from four to eight inches long, and from three to six broad. *Racemes* very long-peduncled, sometimes proliferous ; by age the rachis lengthens into the form of a short raceme. *Flowers* very large, pure white ; long-peduncled. *Calyx* five-parted,

smooth. *Corol* five-parted rotate ; *segments* oblong, in the bud imbricated. *Nectary* subcylindric ; *exterior lamina* membranaceous, ensiform, ending in long, fine, acute points, which converge over the stigma, their texture horny and polished ; in their retuse tops, are the pits where the authers are lodged. *Germs* two ; *Style* short ; *common stigma* five-angled ; to the points of the angles the five-ovate, hard, polished, chesnut-coloured bodies are attached, which give substantial support to the five pairs of large, oval anthers, by means of their thick, short, polished chesnut-coloured, cyathiform pedicels.

29. A. *acuminata. R.*

Ligneous parts with suberous bark. *Leaves* ovate-oblong, acuminate, above polished, villous underneath. *Umbels* paired in the alternate axils, sub-globular, crowded. *Mouth* of the *corol* with five incurved glands.

A large scandent, and twining perennial, with the bark of the trunk, and old woody parts particularly spongy, and deeply split. The young *shoots* villous. *Umbellets*, in pairs, sub-axillary, and never in opposite axils ; crowded with small, white, short-pedicelled flowers. It is a native of the forests of Chittagong, and from thence was introduced into the Botanic Garden at Calcutta, where it blossoms about the beginning of the rainy season.

MELODINUS. Schreb. gen. n. 425.

Calyx five-parted. *Corol* infundibuliform ; mouth crowned with five simple, or divided scales. *Germ* superior, two-celled ; *ovula* numerous, attached to the thick, elevated centre of the partition. *Berry* two-celled, *seeds* numerous, immersed in pulp. *Embryo* furnished with a perisperm ; *radicle* centripetal.

1: M. *monogynus. R.*

Shrubby, scandent. *Leaves* opposite, lanceolate, glancing, acuminate. *Panicles* axillary, and terminal, subglobular, crowded, brachiate. *Nectarial scales* five, undivided.

Sad*u*l kou is the vernacular name in Silhet, where it is found indigenous in the forests, climbing over trees, &c. Flowering time the month of April. Seed ripe in October and November. It is eaten by the natives ; the taste of the firm pulp in which the seeds are immersed is sweet and agreeable to the taste.

Young shoots round, and smooth, lactescent. *Leaves* opposite, short-petioled, lanceolate, shining, entire, acuminate, from three to six inches long and one or two broad. *Stipules* none. *Panicles* terminal, and from the *exterior* axils, subglobular, brachiate ; extreme divisions three-flowered. *Bractes* oblong, acuminate. *Flowers* pretty large, white and fragrant. *Calyx* of five, smooth, oval, permanent leaflets. *Corol* infundibuliform ; *segments* of the border five, subfalcate. Mouth of the tube crowned with five, undivided, wooly, ensiform scales. *Filaments* five, short, inserted into the tube of the corol near the base. *Anthers* sagittate, lodged rather below the middle of the tube, opening on the sides below the apex. *Germ* superior, two-celled, with many *ovula* in each, attached to elevated receptacles on the middle of the partition. *Style* short, and undivided. *Stigma* clammy, subovate, embraced by the anthers, apex slender, and bifid. *Berries* of a round, somewhat four-cornered shape, size and appearance of a small, deep-coloured, very smooth orange ; two celled. The whole very inviting to the eye, the firm pulp in which the seeds are immersed is palatable, and is eaten by the natives where the plants grow. *Seeds* numerous, long, ovate, considerably compressed, size of a cucumber seed. *Integument* besides the pulp of the berry two ; exterior rugose, thick, dark brown ; inte-

terior membranaceous. *Perisperm* conform with the seed. *Embryo* straight. *Cotyledons* oval. *Radicles* cylindric, centripetal.

WILLUGHBEIA. Schreb. pen. n. 417.

Calyx five-toothed. *Corol* hypocrateriform. *Stigma* capitate. *Germ* superior, one-celled; *ovula* many, attached to two opposite parietal receptacles. *Berry* one-celled. *Seeds* few, nidulent. *Embryo* without perisperm.

W. *edulis. R.*

Shrubby, scandent. *Leaves* opposite, oblong, acuminate. Flowers in small axillary fascicles. *Berries* very large, spherical.

Luti-am, is the vernacular name in Chittagong, Silhet, &c. where it grows to an immense size, running over the largest trees. It is in flower and fruit nearly the whole year. *Bark* of the trunk and large branches of large, old plants, above half an inch thick, inwardly dark brown; surface tubercled; taste somewhat astringent. *Leaves* opposite, short-petioled, oblong, acuminate, entire, polished, veins simple, and parallel; length from three to five inches, and the breadth one or two. *Peduncles* axillary and terminal solitary, short, each supporting a few middling sized, pale pink-coloured, short-pedicelled flowers, forming small fascicles. *Bractes* solitary, at the base of each pedicel, ovate. *Calyx* one-leaved, five-toothed. *Segments* ovate, subciliate. *Corol* one-petalled, infundibuliform; *tube* gibbous near the middle where the stamina are lodged, a little hairy on the inside; *border* of five, sublanceolate, smooth, expanding segments which are imbricated in the bud. *Filaments* short, inserted into the tube of the corol, a little above its base. *Anthers* subsagittate, but do not adhere to each other, on each side a polliniferous groove. *Germ* superior, ovate, smooth, one-celled; *ovula* many, attached to two opposite parietal receptacles. *Style* short. *Stigma*

conical, and closely embraced by the anthers. *Berry*, the size of a large lemon, subovate, covered with a thick, friable, pretty smooth, brownish yellow cortex, one-celled. *Seeds* many, nidulent, in a soft, yellowish pulp, which is intermixed with softer cottony fibres; size, of a small garden bean; shape, various. *Integuments* two, *exterior* rather fleshy, and seems to furnish the soft fibres with which the pulp is intermixed; *interior* thin and friable. *Perisperm* none. *Embryo; cotyledons* conform to the seed, of a firm, straw colour with a tinge of pink, while fresh; if wounded, a quantity of milk exudes which soon becomes bad. *Caoutchouc*. *Radicle* small, roundish, *vaga*.

Every part of the plant on being wounded discharges copiously a very pure white viscid juice which is soon, by exposure to the open air changed into an indifferent kind of elastic rubber, or *caoutchouc*. The fruit is eaten by the natives where it grows, and is by them reckoned good.

CHENOPODIUM. *Schreb. gen. n.* 435.

Calyx beneath, five-leaved, or five-parted, permanent. *Corol* none. *Seed* solitary, covered with a thin membrane, and closely embraced by the permanent calyx.

1. *C. album*. *Willd.* 1302.

Annual, erect, from two to eight feet high. *Leaves* long-petioled broad, trowel-shaped, obtuse, toward the posterior angles dentate, lobate, mealy. *Panicles* terminal, erect, contracted, leafy.

Beng. Betu-sag; used by the natives for a pot herb.

It is common in Bengal and many other parts of India.

2. *C. viride*. *Willd.* 1. 1303.

Annual, erect, from two to nine feet high. *Leaves* long-petioled, narrow trowel-shaped, toward the posterior angles

dentate-lobate, mealy while young. *Panicles* terminal, erect, contracted, leafless, very minute.

In India we have two varieties of this species; one entirely green; the other with the angles of the stem and branches of a beautiful purple colour, and the leaves, and the mealy panicles somewhat reddish. The leaves of both, as well as those of *album* are eaten by the natives, and are very frequently cultivated by them for that end.

3. *C. laciniatum. R.*

Annual, erect, three or four feet high. *Leaves* long-petioled, multifid, mealy. *Panicles* terminal, erect, contracted.

Common in the vicinity of Calcutta during the dry season.

BETA. Schreb. gen. n. 436.

Calyx five-leaved. *Corol* none. *Seeds* reniform, within the substance of the base of the calyx.

B. bengalensis. R.

Annual, erect; inferior leaves, petioled and trowel-shaped; superior, sessile, and lanceolate. Flowers in pairs; leaflets of the calyx, equal and not toothed.

Beng. Palung.

I cannot be certain whether this differs from *maritima* so much as to render it necessary to make it a distinct species; however, I think it may, as it always grows erect, and with its numerous branches nearly so. It is much cultivated by the natives of Bengal and the northern Circars. The leaves they use in their stews, &c. Flowering time the cold season.

Root ramous, annual. *Stem* erect, ramous, furrowed, smooth, pale green, the whole height from one to three feet. *Leaves* alternate, the lowermost large, petioled, trowel-shaped, and running down the petioles, smooth, succulent, with waved margins; the superior, or floral

leaves small, subsessile, incurved, nearly lanceolate, and with curled margins. *Spikes* very long. *Flowers* rather remote, always in pairs. *Calyx ; leaflets* equal, without teeth, or process of any kind ; margins membranaceous. *Filaments* inserted into a ring round the flower. *Styles* from two to four, short.

SALSOLA. Schreb. gen. n. 437.

Calyx five-leaved. *Corol* none. *Capsules* one-seeded. *Seed* screw-shaped.

1. *S. nudiflora. Willd.* 1. 1313.

Prostrate, perennial. *Leaves* entire, linear, obtuse, fleshy. *Spikes* terminal, long, ramous. *Flowers* fascicled, trigynous.

Teling. Rawa-cada.

It is a native of salt, barren lands near the sea and flowers the greater part of the year.

Stems perennial, many, spreading close upon the ground, and often striking root, ramous, extremities of the branches ascending; *young parts* smooth, and coloured reddish. *Leaves* alternate, sessile, linear, fleshy, obtuse, smooth, generally about half an inch long. *Spikes* terminal, erect, very long, compound, leafless. *Flowers* very numerous, collected in little fascicles. *Filaments* inserted into the bottom of the divisions of the *calyx*. *Styles* three, spreading. *Seeds* smooth, horizontal, oval, beaked, covered by a thin membrane, and that by the permanent *calyx*.

This plant is very common in many places near the sea ; the natives gather it for fuel only. The taste is strongly saline, no doubt it would yield good *Fossil alkali*. How many valuable sources of wealth, and happiness lie lost to the world, over many parts of the

Company's Territorial possessions in India for want of encouragement, and enterprizing men.

The two species of *Salicornia,* already described, and this plant, might be made to yield *barrilla* sufficient to make *soap* and *glass* for the whole world; at the same time such a work would give bread to thousands of poor starving labourers; which no doubt would greatly promote population, and the consumption of the productions of these fertile countries; for, except during years of remarkable drought, there is always more grain produced than can be sold on the spot, I will not say than can be eaten, because few of the poorer classes can, at the best of times procure a sufficiency of food during the dry season of the year, when there is little or no employment for them. It therefore appears the more necessary to institute such branches of manufacture as will employ those people during the dry season; such as gathering these plants and burning them for the *Alkali.*

Our extensive, and I may also say impenetrable forests (*Jungle*) which occupy such large tracts of the best lands in India might by degrees be cleared, and turned into potash, for the same reasons, and by the same means. Certainly labour is as cheap here as in Russia, where the largest quantities of that useful commodity are made. In this hot climate we have many advantages that the Russian manufacturer must ever remain deprived of; viz. immense tracts of wood of the most solid texture which requires little labour to prepare it for the fire, on account of the great drought and heat which prevails at the season this manufacture could best be carried on. The same heat and drought is fully sufficient to evaporate the ley, without the least assistance of fire. All that could be necessary, would be some broad shallow vessels, exposed to the sun, and wind. (In this manner would I recommend the extract of my new *Fever bark* to be prepared.) But to effect such highly interesting objects, the labours

of an individual however inclined to promote the public good, can avail but little, when not powerfully and cordially assisted by Government. The Spanish ministry sensible of the value of that branch of commerce, has prohibited the exportation of the seed of their best *Barilla* plant, under the strongest penalties.

2. *S. indica. Willd.* 1. 1317.

Perennial, erect. *Leaves* linear, acute, semicylindrical, fleshy. *Spikes* panicled, leaf bearing.

Teling. Ella-kura.

With *C. prostratum, Salicornias,* &c. a native of the salt moist ground near the sea. It flowers during the most part of the year.

Stem woody, perennial, erect, very short, almost immediately branching out into many diffuse, alternate ramifications which sometimes rest on the ground, but in general they are sufficiently strong to support themselves. *Young branchlets* erect. *Leaves* scattered round every part of the branchlets, erect, approximate, sessile, linear, semicylindric, fleshy, smooth; half an inch long, and one-twelfth broad. In young plants, green, in older, coloured. *Floral* leaves shorter, and thicker. *Spikes* terminal, erect, compound, or panicled, glomerate, leafy. *Flowers* small, collected at the axills of the floral leaves. *Calyx* five-leaved; *leaflets* outwardly semicylindric, within concave; *margins* slightly membranaceous. *Styles* two, or to near the base two-cleft, hairy. *Stamens* shorter than the calyx. *Anthers* globular, two-lobed. *Seed* horizontal, beaked, enclosed in a tender membrane, which is enveloped by the succulent calyx.

The green leaves of this species are universally eaten by all classes of natives wholive near the sea, where it is to be had; it is reckoned very wholesome, and must be so, as during times of scarcity and famine, it is a very essential article of the food of the poor natives; they dress it in their

curries, &c. The leaves of this plant alone, the natives say, saved many thousand lives during the late famine of 1791, 2, and 3: for while the plant lasted, most of the poorer classes who lived near the sea, had little else to eat.

GOMPHRENA. Schreb. gen. n. 441.

Calyx coloured, exterior, three-leaved; *leaflets* two, converging, keeled. *Petals* five. *Nectary* cylindric, five-toothed. *Style* half two-cleft. *Capsules* one-seeded.

1. *G. globosa. Willd.* 1. 1321.

Annual, at first erect, by age diffuse. *Leaves* ovate-lanceolate. Heads solitary. *Peduncles* two-leaved.

Sans. Amlana.

Hind. Lal gool-makhmul, the crimson flowered variety. Suffet gool-makhmul, the white flowered.

Flos globosus. *Rumph. amb.* 5. *t.* 100 *f.* 2.

Wadapu. *Rheed. mal.* 10. *t.* 37.

In Gardens over India where it blossoms during the rainy and cold season, native place uncertain.

CELTIS. Schreb. gen. n. 1591.

POLYGAMOUS, HERMAPHRODITE. *Calyx* five leaved. *Corol* none. *Germ* superior, one-celled, one-seeded, attachment superior. *Drupe* one-seeded. *Embryo* transversely inverse, with scanty perisperm.

MALE. *Calyx* five-six-parted. *Corol* none. FEMALE. *Calyx* five-six-parted. *Drupe* and *embryo* as in the hermaphrodite.

C. *tetrandra. R.*

Leaves obliquely ovate, lanceolate, serrate, cuspidate, smooth. *Flowers* axillary, triple, tetrandrous.

A native of Nepal, from whence the seeds were sent by Dr. Buchanan to this Garden in 1802; in March 1809 the trees began to blossom, and ripened their seed in September; they were then fifteen or twenty feet high, with stout, short, rather crooked *trunks*, and smooth ash-coloured *bark*. *Branches* spreading much, and ending in long, drooping, or horizontal twigs. *Young shoots* bifarious, and slightly villous. *Leaves* alternate, bifarious, short-petioled, obliquely ovate, lanceolate, the base being unequally cordate, and entire; anterior margins obtusely serrulate; points taper, acute and entire, rather smooth on both sides; while young, colored, length about three inches, by one and a quarter broad. *Stipules* linear-lanceolate, caducous. *Peduncles* axillary, tern, longer than the petioles, one-flowered, generally one hermaphrodite, and two male.

HERMAPHRODITE. *Calyx*, four-leaved. *Stamina* four, longer than the calyx, and expanding with an elastic jerk, as in *urtica*, &c. *Germ*, oblong, one-celled, with one seed attached to the top of the cell. *Styles* two, recurvate, thick. *Drupe* round, size of a pea, smooth, olive colour. *Nut* obovate, apex obtuse; base, acute, ribbed, one-celled. *Seed* solitary. *Integument* single, thin, membranaceous. *Perisperm* no other than a fleshy partial Integument, entering into the plaits of the cotyledons. *Embryo*, the size of the seed. *Cotyledons* variously folded. *Radicle* sub-superior, that is ascending toward the umbilicus or apex of the cell of the nut, &c. as in *Celtis occidentalis*. *Gert. sem.* 1. 374. *t.* 77.

MALE. *Calyx* and *stamina* as in the hermaphrodite. No *pistillum*.

Note. C. *occidentalis* has flowered in this Garden, but the filaments are short, and not endowed with that remarkable elasticity of the Urtica, as in our Nepal species.

2. C. *orientalis. Willd.* 4. 995.

Arboreous. *Leaves* bifarious, obliquely cordate, serrate, five-pointed, villous underneath.

Papyrus spuria. *Kæmph. amom.* 474. *t.* 472.

Beng. Chicon.

It is common over most parts of India, particularly in Bengal, where it grows to be a small, erect tree, covered with smooth, dark-coloured bark. It is in blossom the greater part of the year.

Leaves alternate, bifarious, short-petioled, ovate-cordate, fine-pointed, minutely serrate; above a little scabrous, villous and whitish underneath. *Flowers* axillary, collected on short, common, two-cleft, diverging pedunCles.

Male. *Calyx* five-leaved, or to the base five-parted. *Corol* none. *Stamens* five, elastic, longer than the calyx. *Pistil* an oval, abortive body, in the centre of the stamens.

Female flowers generally on a separate tree, though sometimes androgynous. *Calyx* as in the male. *Germ* oval. *Styles* two, hairy. *Drupe* small, succulent, when ripe black. *Nut* rugose, with one cell, and one seed.

This tree is neither useful, nor ornamental, nor is it of long duration.

3. C. *trinervia.*

Arboreous. *Leaves* obliquely ovate-cordate, acuminate, serrulate, three-nerved, smooth. *Flowers* pentandrous.

A middling sized tree, a native of Chittagong, where it blossoms in February and March, about the time the young foliage appears, and that of the former year begins to fall.

Young shoots a little villous, the bark of the old woody parts ash-coloured, with still lighter coloured specks. *Leaves* alternate, short-petioled, obliquely ovate-cordate,

remotely serrulate, acuminate, smooth on both sides; length from four to six inches, and the breadth two and a half. *Stipules* ensiform.

MALE. *Flowers* on small, open racemes from the base of the young shoots, or solitary under the hermaphrodite ones, small and not very conspicuous. *Calyx* five-leaved. *Corol* none. *Filaments*, five, short, opposite to the leaflets of the calyx. *Anthers* oval.

HERMAPHRODITE flowers on slender, villous, axillary racemes, they are remote, and rather larger than the male. *Calyx* and stamina as in the male. *Germ* superior, ovate-oblong, one-celled, containing one ovula, attached to one side of the top of the cell. *Style* scarcely any. *Stigmas* two, spreading, large, and villous.

4. C. *tomentosa. R.*

Shrubby. *Leaves* long-cordate, acuminate, serrulate, three-nerved, scabrous above, very downy underneath. *Thyrses* axillary short, and dense.

Native of Chittagong where it flowers in April.

ULMUS. Schreb. gen. n. 443.

Calyx five-cleft. *Corol* none. *Germ* superior, one-celled, one-seeded, superior. *Capsules* pedicelled, compressed, membrane-winged, one-seeded. *Embryo* inverse without perisperm.

1. U. *lancifolia. R.*

Leaves obliquely-lanceolate, equally and obtusely serrulate, obtusely acuminate, hard and lucid. *Flowers* pedicelled, hexandrous. *Capsules* unequally obcordate, pedicelled.

A large timber tree, a native of the hilly parts of the province of Chittagong, where it flowers in March. *Trunk* erect. *Branches* many, extending far on every side.

Young shoots slender, smooth and drooping considerably. *Leaves* bifarious, short-petioled, unequally lanceolate, very equally obtuse-serrate, of a very hard texture, with a lucid surface; length from two to three inches; about one broad. *Stipules* ensiform, caducous. *Flowers* numerous, small, long-pedicelled, collected in little solitary fascicles in the lower axills, or in those of the former year's leaves. *Pedicells* slender, villous, one-flowered. *Bractes* many, round the insertion of the pedicells, oval, ciliate. *Calyx* campanulate, five-toothed, smooth. *Filaments*, six, longer than the calyx, broad, smooth. *Anthers* oval, two-lobed. *Germ* superior, while in the calyx subsessile, but after it opens it becomes pedicelled, oblong, one-celled, containing one *ovula*, attached to the top of the cell. *Styles* two, short, broad, and villous on the inner edge. *Stigmas* simple. *Capsule* pedicelled, unequally-obcordate, very thin, scariose, winged, nearly an inch each way, one-celled. *Seed* solitary, oval, compressed. *Integument* single, thin, brown. *Perisperm* none. *Embryo* conform to the seed, inverse.

2. U. *virgata. R.*

Branchlets pendulous. *Leaves* lucid, obliquely-oblong, equally serrate, base unequal. *Flowers* crowded, short peduncled, tetrandrous. *Fruit* obliquely oval, sessile.

From China this beautiful, small slow growing tree, was introduced into the Botanic Garden at Calcutta, by Sir John Royds; where in about ten years, from the time of its arrival, it began to blossom in November, and ripened its seed in February.

Trunk in trees of ten or twelve years growth, nearly erect, short, and not thicker than a man's leg. *Branches* few, spreading much; many of the extreme branchlets run out into very long, slender, pendulous twigs. *Bark* of the young parts lighter coloured, and a little scabrous. *Height* of the whole tree about ten feet. *Leaves* alter-

nate, bifarious, short-petioled, obliquely oblong, equally, and obtusely serrate, obtuse, of a hard or firm texture, and somewhat scabrous, yet shining on the upper surface, length one or two inches, and about half of that in breadth. *Stipules* ensiform, caducous. *Flowers* axillary, minute, several together, short-peduncled. *Bractes* several, roundish, hard, dry, dark brown, concave scales embracing the flowers before expansion, caducous. *Calyx* four, or five-parted ; *segments* rounded, thin, and permanent. *Corol* none. *Filaments* four, or five; four most common, rather longer than the germ. *Anthers* large, two-lobed. *Germ* obliquely oval, one-celled, with one ovula attached to the top of the cell. *Styles* none. *Stigmas* the villous margins, of the somewhat lengthened, bifid apex of the germ. *Capsule* superior, thin, obliquely oval, and sessile in the calyx, with a broad, membranaceous, coloured margin ; less than half an inch long, one-celled, &c.

3. U. *integrifolia. Willd.* 1. 1326. *Corom. pl.* 1. *N.* 78.

Leaves ovate, entire. Male flowers mixed amongst the hermaphrodite.

Tam. Tambachi-marum.

Teling. Naulee.

A large timber tree, a native of the Circar mountains. It flowers during the cold season. *Leaves* deciduous about the close of the wet season; they come out again in March.

Trunk tolerably straight, and high. *Bark* a little scabrous, of a dirty grey colour. *Branches* numerous, spreading, horizontal, forming a large shady head. *Leaves* alternate, bifarious, short-petioled, ovate, though sometimes cordate, entire, smooth, shining ; from three to five inches long, and about two broad. *Stipules* lanceolate, caducous. *Flowers hermaphrodite*, and *male* mixed, and springing from little germs over the leafless branchlets.

HERMAPHRODITE.

Calyx or corol four, five, or six-leaved; leaflets spreading, small, oval, caducous. *Filaments* seven, eight, or nine, exceedingly short. *Anthers* linear, erect, two-lobed. *Germ* superior, obovate, emarginate, compressed. *Styles* two, short, incurved, permanent. *Stigmas* acute, woolly, *Capsule* pedicelled, orbicular, leafy, compressed, emarginate, one-celled, one-valved, not opening. *Seed* none.

MALE FLOWERS mixed with the hermaphrodite. *Calyx* and *Stamen* as above. *Pistil*, no rudiment of one.

Observation. The first part of the flowers that appears, is the anthers; they are then reddish; next the calyx increases, and becomes visible to the naked eye, but is at all times small, and unless looked for, is seldom observed.

The wood of this tree is reckoned of a good quality by the natives, and is employed for a variety of uses.

MOACURRA. R.

Polygamous. *Calyx* five-leaved. *Corol* five-petalled. *Nectary* a scale within the base of each petal. *Germ* superior, two-celled, cells two-seeded, attachment superior. *Capsule* two-lobed, two-celled, two-valved. *Seed* solitary, arilled. *Embryo* inverse, with perisperm.

M. *gelonioides. R.*

Moakurra, is the vernacular name in Silhet, where it is indigenous; it grows to the size of a small tree. Flowering time April and May; the seeds ripen in December. *Branches* numerous, ascending. *Bark* of the old woody parts rather rough with little whitish dots; that of the young shoots villous, and yellowish. *Leaves* alternate, short-petioled, broad-lanceolar, entire, long, taper-pointed, of a thin texture, and smooth; three or four inches long by one and a quarter broad. *Stipules* subulate, villous.

MALE flowers numerous, small, and collected on small, axillary, solitary short-peduncled fascicles. *Calyx* five-leaved; *leaflets* oval, hoary. *Petals* five, length of the calyx, but narrower and smooth. *Nectarial scales* five on the base of the petals, small, oval, alternate with the filaments. *Filaments* five, from the receptacle, alternate with the petals, and shorter than them; *anthers* cordate.

HERMAPHRODITE FLOWERS on a different tree and disposed as in the male. *Calyx, corol, nectary*, and *stamina* as in the male. *Germ* ovate, cordate, a little compressed, downy, two-celled, with two ovula in each, attached from the apex to the top of the cells. *Styles* two, recurved. *Stigmas* somewhat two-lobed. *Capsule* transversely oval, two-lobed, soft, with grey olive-coloured down, size of a nutmeg, two-celled, two-valved, opening round the apex. *Partition* slender. *Seed* (nuts?) one in each cell, or lobe of the *capsule*, oblong, more convex, on the outside completely covered with a soft scarlet or exterior tunic. *Integuments* two besides the red aril; *exterior* of a tough fibrous ensiform texture, and very rugose on the outside; *interior* soft, and spongy. *Perisperm* none. *Embryo* inverse; *cotyledons* two, conform to the seed. *Plumula* from two to five-lobed. *Radicle* short, superior.

In habit this tree approaches Willdenow's two *Geloniums*, and in the structure and contents of the germ and mature seed vessel, they agree almost exactly, except in the absence of a perisperm in this; yet their flowers differ widely, here they are pentandrous with a five-petalled corol, male on one tree and hermaphrodite on another; completely dioecous, no corol, polyandrous.

GENTIANA. Schreb. gen. 450.

Corol one-petalled. *Capsule* superior, two-valved, one-celled; receptacles two pair, longitudinally adjoined to the inside of the margins of the valvelets.

1. G. *verticillata. Linn. suppl.* 174.

Root creeping, perennial. *Stems* simple, erect, four-sided. *Leaves* sessile, lanceolate, three-nerved. *Flowers* verticilled; *corols* five-cleft, funnel-shaped, with five glands below the filaments.

Exacum hyssopifolium. Willd. 1. 640.

Teling. Nella-gullie.

A small, erect plant, with an annual stem, and perennial roots; a native of moist uncultivated grounds. It flowers during the wet season.

Root perennial, creeping, filiform. *Stems* herbaceous, simple, erect, from six to twelve inches high, four-sided, jointed. *Leaves* opposite approximated, cross-armed, sessile, lanceolate, three-nerved, smooth, entire, one and a half or two inches long, by half an inch broad. *Flowers* axillary, sessile, generally three-fold, vertical-like, small, white. *Corol* funnel-form. Nectary, a swelled gland at the insertion of each filament. *Filaments* short. *Anthers* within the tube. *Style* single, length of the filaments. *Stigma* large, two-lobed.

2. G. *cherayta. R. Fleming in Asiat.* 11. *p.* 167.

Herbaceous, straight. *Leaves* stem-clasping, lanceolate, three or five-nerved. *Flowers* terminal. *Corol* rotate, four-cleft, tetrandrous. *Capsules* ovate, bifurcate.

Sans. Chirat*a*-tikt*a*, Chirataka, &c.

Beng. Chirata.

Calamus aromaticus of the Ancients.

This famous plant is said to be found on the mountains of Nepal, and the Morungs.

Root ramous, and probably perennial. *Stems* single, straight, round, smooth, jointed, above ramous; *branches* generally decussated, nearly erect, with their extremities somewhat angular; the whole height of the plant about three feet. *Leaves* opposite, stem-clasping, lanceolate, very acute, entire, smooth, three or five-nerved; size va-

rious. *Stipules* none. *Flowers* yellow, most numerous, peduncled, the whole upper half of the plant forming an elegant, oblong, leafy decussated panicle. *Bractes* two at each division of the panicle, and like the leaves, but smaller. *Calyx* four-cleft; *divisions* linear, acute, permanent. *Corol; border* expanding, four-parted; *divisions* as long as those of the calyx and also permanent. *Stamina* four. *Anthers* cloven at the base. *Style* single, as long as the germ. *Stigma* large, two-lobed. *Capsules* rather shorter than the permanent calyx, and corol, one-celled, two-valved, opening a little at the apex. *Seeds* numerous, affixed to two receptacles adhering to the sides of the valvelets.

Note. When I refer this plant to the genus *Gentiana* I am guided by the capsule chiefly, otherwise I might probably have placed it with the *Exacums*.

An infusion, or decoction of the whole plant, pulled up by the root, about the time the flowers begin to decay and the capsules are well formed, is much used by the natives of Bengal, and the adjoining provinces, as a *tonic*. It appears to me to be a pure bitter, although it gives signs of astringency with a chalybeate. Its febrifuge virtues are in high estimation amongst both natives and Europeans, and I think very deservedly. Our medical gentlemen prescribe it in the same manner, and with the same intention, particularly when *Peruvian Bark* is difficult to be obtained.

CRESSA. Schreb. gen. n. 439.

Calyx five-leaved. *Corol* campanulate, with stamens inserted into the bottom of the tube. *Capsule* superior, two-celled, with from one to four seeds in each.

C. *indica. Willd.* 1. 1320.

Annual, erect, ramous, hoary. *Leaves* alternate. *Flowers* terminal, sessile. *Apices* of the segments of the corol bearded. *Capsule* bearded, four-seeded.

A small, erect, ramous annual, a native of sandy, salt lands near the sea. It flowers during the wet season.

Stem nearly erect, from six to eight inches high, hairy. *Branches* numerous, ascending, alternate, hairy. *Leaves* alternate, very numerous, sessile, the lower, or larger cordate; the upper or smaller ovate, and lanceolate; all are hairy, soft, and very small. *Flowers* terminal, sessile, small, numerous, white. *Bractes* like the leaves. *Calyx* as in *C. cretica*. *Corol*; *tube* campanulate. *Segments* revolute, outside of their apices hairy, withering. *Anthers* oblong, incumbent. *Germ*, its apex woolly. *Stigma* large, globular. *Capsules* four-seeded.

NAMA. Schreb. gen. n. 444.

Calyx five-leaved. *Corol* rotate, five-parted. *Capsules*, superior, one-celled, two-valved, *receptacle* columnar. *Seeds* numerous.

N. *Zeylanica Linn. sp. pl.* 327.

Annual, creeping. *Leaves* lanceolate. Hydrola *zeylanica*. *Willd.* 1. 1327. *Vahl. symb.* 2. 46.

Sans. Langali.

Beng. Kanchra Isha-langulya.

Tsjeru-vallel. *Rheed. Mal.* 10. *t.* 28.

An annual; a native of moist, or marshy ground, such as rice fields. Flowering time, the cold season.

Stems or *branches* many, creeping, round, pretty smooth, from one to four feet long. *Leaves* alternate, short-petioled, lanceolate, entire, smooth. *Flowers*, numerous about the extremities of the branchlets, or solitary, opposite to the leaves or between them; colour a deep bright blue. *Calyx* one-leaved, divided to near the bottom into five, long, narrow, pointed, hairy permanent divisions. *Corol* five-petalled, longer than the calyx. *Filaments* shorter than the corol. *Anthers* sagitate. *Styles* two, spreading.

PANAX. Schreb. gen. n. 1604.

Calyx five-toothed. *Corol* five-petalled. *Germ* two-celled; *cells* one-seeded, attachment superior. *Berry* inferior, two-seeded. *Embryo* inverse, and furnished with a perisperm.

1. P. *palmatum. R.*

Shrubby, armed. *Leaves* palmate, serrate. It is found indigenous in the moist vallies between the hills over the province of Chittagong, where it blossoms about the close of the rains in September.

Stem in healthy plants now three years old, in the Botanic Garden at Calcutta, three feet high, and as thick as a stout walking cane, very completely armed with numerous, straight, acute, brittle prickles; and on the tender young parts mixed with much appressed, short, harsh, ferruginous pubescence, which disappears by the time the parts become ligneous. *Branches* few and like the stem. *Leaves* alternate, petioled, nearly round, palmate, serrulate, smooth and firm; when very young densely clothed with ferruginous down; *lobes* from three-angular to broad-lanceolate, acute; length and breadth of the whole leaf about twelve inches, say from six to eighteen. *Petioles* nearly as long as the leaves, unarmed, columnar base thick or somewhat stem-clasping, and a small acute, stipulary process on each side. *Racemes* lateral, solitary, bearing from twenty to thirty, diverging, peduncled, globular umbellets, of small white flowers. *Bractes* tern at the base of each peduncle; some smaller on the peduncles and one still smaller under the insertion of each pedicel on their little globular receptacle; they are all ferruginous. *Calyx* minute, and minutely five-toothed. *Petals* five, lanceolar, spreading. *Filaments* five, alternate with the petals, and rather longer. *Anthers* ovate, two-lobed. *Germ* inferior, turbinate, two-celled, with one *ovula* in each, attached to the very top of the partition. *Style* short. *Stigma* bidentate.

2. P. *digitatum. R.*

Arboreous, armed. *Leaves* digitate; leaflets entire, lanceolate, acuminate. *Panicles* pendulous. It is the Soonath, or Kota-soona of the Hindus about Silhet, where the tree is indigenous and flowers in May, and produces seed in November.

It is a pretty large tree, with numerous branches spreading in all directions, the younger ones armed with innumerable, short, somewhat incurved, very sharp aculei, which fall off with the exterior coat of the bark. *Leaves* alternate, about the ends of the branchlets, digitate. *Leaflets* generally seven, petiolate, oblong, and broad-lanceolate, entire, smooth, acuminate; from three to six inches long. *Petioles* from ten to fifteen inches long, round, smooth, and unarmed. *Petiolets* from one to two inches long. *Panicles* terminal, from two to four feet long, pendulous, and composed of many, alternate, simple, globular, long-pedicelled, small greenish-yellow flowers. *Common pedun-cle* armed; *partial* or *pedicells*, with some little scaly bractes; all are round, and somewhat downy. *Calyx* five-parted; *divisions* ensiform. *Petals* five, oblong, patent. *Filaments* five, rather shorter than the petals, inserted between them into a fleshy, crenate, poculiform body which embraces the germ. *Anthers* two-lobed. *Germ* sunk in the solid body just mentioned, two-celled, with one *ovula* in each, attached to the top of the partition. *Style* two, shorter than the stamina, coalesced. *Stigma* simple. *Berry* inferior, nearly round somewhat succulent, black, smooth, widely crowned with the remaining five-toothed calyx; size of a black currant, and not unlike one, two-celled. *Seed* solitary, hemispheric, a small groove down the middle of the inside, covered with a single, rather tough, smooth integument. *Perisperm* conform to the seed, cartilaginous. *Embryo* small, inverse, lodged on the outside of the upper half of the perisperm. *Cotyledons* small, oblong. *Radicle* oblong, superior.

3. P. *fragrans. R.*

Arboreous, unarmed. *Leaves* supra-decompound; *leaflets* obovate oblong, acuminate sub-entire, smooth. *Panicles* terminal.

Gootee-soona is the vernacular name of it in Silhet, where it grows to be a middling sized tree. Its immense panicles of fragrant blossoms appear in October and November, and the seed ripens in February and March.

Leaves alternate, approximate, oppositely supra-decompound, from two to four feet long. *Leaflets* ovate-oblong, entire, except in young plants, then remotely and very sharply serrulate, all rather obtusely acuminate, and smooth; from two to six inches long, and about half that in breadth. *Petioles* perfectly round, polished; *base* sheathing, and swelled. *Panicles* terminal, immensely large, and composed of numerous compound branches of short peduncled, globular umbellets of small fragrant flowers, embraced by a minute, ferruginous mealy involucre. *Calyx* superior, five-toothed. *Petals* five, spreading, oblong-lanceolate, a ridge down the middle on the inside. *Filaments* five, alternate with, and longer than the petals. *Anthers* ovate. *Germ* inferior, two-celled, with the *ovula* in each attached from its upper end to the partition. *Styles* two, short, woolly. *Stigma* simple. *Berries* two-lobed, a little flattened, two-celled, size of two small peas joined. *Seed* solitary, attached as in the germ. *Perisperm* conform to the seed. *Embryo* minute, lodged almost transversely in the apex of the perisperm, with the point of the radicles a little elevated towards the umbilicus.

4. P. *fructicosum. Willd.* 4. 1127.

Shrubby. *Leaves* supra-decompound; *leaflets* lanceolate, acutely serrate, often laciniate. *Umbellets* globular, forming terminal panicles.

Scutellaria tertia. *Rumph. amb. vol.* 4. *t.* 33.

This elegant erect shrub, was introduced into the Botanic Garden near Calcutta from the Moluccas in 1798, and in April 1800 blossomed for the first time. There were only two plants originally, and both completely hermaphrodite.

Trunk straight, but short, soon dividing into many *branches;* general height from five to eight feet. *Bark* dark coloured, with many small, ash-coloured, scabrous dots. *Leaves* alternate, recurved, supra-decompound; from ten to fifteen inches long. *Pinnæ* and lower pair of *Pinnulæ* opposite; there are generally about six pair of the former, but the number of the latter is very unequal. *Leaflets* lanceolate, often variously laciniate, serrate; *serratures* ending in subulate, inoffensive points, smooth on both sides. *Petioles* stem-clasping, round, smooth, maculated, jointed, and swelled at the joints. *Inflorescence* may, I think it should, be called a terminal panicle, composed of numerous, small subrotund simple umbellets. *Involucres* most minute, caducous. *Perianth* small, generally five-toothed, permanent. *Petals* five, linear, first spreading, then reflexed. *Filaments* five, alternate with, but shorter than the petals. *Anthers* oblong. *Germ* inferior, generally two-lobed though sometimes three. *Styles* short, two or three according as there are lobes in the germ. *Berry* two or three-lobed, small, lead-coloured. The pulp stains paper of a dark violet colour. *Seeds* one in each lobe of the bery.

It is readily propagated from cuttings and suckers.

5. P. *conchifolium. R.*

Shrubby. *Leaves* simple, round-cordate, acutely serrate, concave.

Scutellaria. *Rumph. amb.* 4. *t.* 31.

A pretty large, very erect, smooth shrub, a native of the Moluccas, from thence introduced by way of Madras in-

to the Botanic Garden at Calcutta where is grows freely during the hot and rainy season; but when the cold weather of December and January sets in sharp, it generally loses nearly as much, during those two months, as it gains the rest of the year. It is curious and ornamental on account of the large, lucid, deep green, concave, or ladle-shaped leaves.

STROEMERIA. Vahl. Symb. 1. 19.

Corol four-petalled, or none. *Calyx* four-leaved. *Nectary* ligulato-infundibuliform. *Germ* one-celled,. many seeded. *Berry* pedicelled, many-seeded.

1. S. *tetrandra. Willd.* 1. 993.

Shrubby. *Leaves* linear-oblong. *Corol* four-petalled; *nectary* infundibuliform. *Stamina* four.

Cleome fruticosa. *Linn. sp. pl.* 957. *Burm. ind. t.* 46. *f.* 3.

Teling. Chemoorda.

A large straggling, very ramous shrub; a native of old walls, dry barren ground, &c. It flowers during the greater part of the year.

Stem scarcely any, but woody branches innumerable, with the extremities often drooping. *Leaves* alternate, short-petioled, oblong, or broad-lanceolate, entire, an inch and a half long.

Stipules minute. *Racemes* terminal, few-flowered, downy. *Bractes* awled, solitary. *Calyx* four-leaved; *leaflets* oval, expanding, greenish white. *Petals* four, long-clawed, equal, oval, waved, sub-erect; two placed laterally, and two above. *Nectary* tubular, erect, about as long as the claws of the petals; inserted into the upper side of the base of the pedicels of the germ, and stamens; *mouth* oblique, widening, jagged. *Filaments* four, awled, ascending, inserted into the middle of the pedicel, or column that

supports the germ. *Anthers* oval, two-parted at the base. *Germ* oblong, sitting on the extremity of a long, ascending pedicel. *Style* none. *Stigma* simple. *Pericarp* a siliqua, subcylindric, pendulous, replete with firm, orange-coloured pulp, in which the seeds are immersed. *Seeds* several, kidney-form.

2. S. *trifoliata. R.*

Shrubby. *Leaves* ternate. *Flowers* two-petalled, hexandrous.

A native of Kootullum, where it was found by Dr. Berry, growing to the height of ten feet, with long, unarmed, weak branches.

Leaves alternate, ternate. *Leaflets* lanceolate, entire, smooth, about two inches long, and rather more than half an inch broad. *Petioles* scarcely half the length of the leaflets. *Stipules* subulate. *Racemes* terminal, from five to ten-flowered, villous. *Flowers* large, on long villous, patent pedicels. *Bractes* minute, subulate, generally three under the insertion of each pedicel. *Calyx* of two opposite pairs of ovate, oblong, veined leaflets, the exterior pair larger, the inner more deeply coloured. *Petals* two, large, round, pure white, beautifully veined and elevated on claws nearly as long as the petals themselves which ascend opposite to the pedicel of the fructification. *Nectarium* horn-shaped, rising to a curve, just within the claws of the petals, and shorter than them; *mouth* perforated, and ornamented with a large, reflected border like a ruffle, colour a bright yellow. *Filaments* six, elevated on a long ascending pedicel, opposite to and as long as the claws of the petals, nearly erect, and about as long as the pedicel which supports them. *Anthers* linear, erect, opening on the side. *Germ* elevated rather above the anthers, on a second pedicel, or stipe, linear, one-celled, with two longitudinal rows of *ovula* attached to the inside of both sutures as in the siliquous plants. *Style* none.

Stigma large, convex. *Capsules* berried, siliquose, subcylindric, about as thick as a goose quill, and nearly two inches long, one-celled, two-valved. *Seeds* a few; reniform, attached, as in the germ.

HOLIGARNA. R.

POLYGAMOUS. *Calyx* five-toothed. *Petals* five, germ one-celled; *ovula* single, attachment lateral. *Berry* inferior, one-seeded. *Embryo* transverse, without perisperm.

1. H. *longifolia. R.*

Cattu-tsjeru, or Kattou-tjeroe. *Rheed. Mal.* 4. *p.* 19 *t.* 9.

Leaves alternate, cuneiform, some inoffensive subulate bodies on the inside of the short petiole. *Flowers* panicled.

A large tree, a native of the mountainous parts of Chittagong, where it blossoms in January. *Seed* ripe in May and June.

Dr. Buchanan first found the male tree in Chittagong, and some years after found the female hermaphrodite in Malabar, and gave it the name *Holigarna*, from its appellation in the language of Kurnata. He thinks it is the variety called *Bibo* of the *Cattu-tsjeru*, *Rheed. Mal.* 4. *t.* 9. And says the natives of Malabar by incision, extract an exceedingly acrid juice, with which they varnish their targets. I am however inclined to consider *Van. Rheed's Cattu-tsjeroe* to be this very tree, and his *Bibo*, or *Tsjeeroo*, vol. 4. p. 20. to be *Semecarpus* Anacardium.

Trunk straight, in a twelve years old male tree ten inches in circumference. *Bark* smooth, ash-coloured. *Branches* patent; height of the whole tree twenty-five feet. In its native soil the trunk attains to the thickness of six feet in circumference; while the total height of the tree is above fifty. *Leaves* alternate, crowded a-

bout the ends of the branchlets, short-petioled, narrow, cuneiform, entire, acute, smooth on both sides, but paler underneath ; length one or two feet, and the breadth from three to six inches. *Petioles* short and thick, and armed generally with two subulate, inoffensive, incurved, thorn-like bodies on each side of the margin. *Stipules* no other than the last mentioned subulate bodies, on the petioles.

MALE. *Panicles* axillary, single, much shorter than the leaves. *Flowers* numerous, small, dull white. *Bractes* small, ferruginous. *Calyx* five-sided ; *angles* somewhat sharp. *Corol* flat, to the base five-parted, or it may be called five-petalled. *Segments* oblong, villous. *Filaments* five, shorter than the corol. *Anthers* incumbent.

FEMALE-HERMAPHRODITE on a separate tree. *Panicles, bractes, calyx,* and *corol* as in the male. *Stamina* as in the male, but much smaller, and with minute, seemingly abortive *anthers*. *Germ* inferior, a little hairy, with one compressed cell containing one compressed *ovula,* attached to one side of the top of its cell. *Styles* three, recurved. *Stigmas* crescent-shaped, a little hairy. *Berry* inferior, naked, exactly ovate, a little compressed, size of a large olive, smooth, when ripe yellow, one-celled, evalvular. *Cortex* rather thick, and containing between its soft lamina, numerous cells, filled with a black, rather thick, acrid fluid as in the common marking nut, or Anacardium. *Seed* conform to the berry. *Integument* single, membranaceous. *Perisperm* none. *Embryo* conform to the seed, transverse. *Cotyledons* equal, ovate, yellowish. *Corcle* lateral. *Plumula* hairy, acute. *Radicle* oblong, inverse, attached to one edge of the cotyledons, considerably below their apex and corresponding with the attachment of the *ovula* in the germ.

2. H. *racemosa. R.*

Leaves alternate, linear-oblong. *Flowers* racemed.

Am-jour the vernacular name in Silhet where it is indigenous on the hills of that province, and grows to be a large tree. It flowers in March, and the fruit ripens in May, June and July. *Branches* and *branchlets* very numerous, the bark of the former ash-coloured and rather rough ; of the latter, smooth, and void of pubescence. *Leaves* alternate, petioled, lanceolar and linear, oblong, entire, obtusely acuminate, of a hard texture, glossy on the upper surface or rather glaucous underneath; from four to eight inches long, from one to three broad. *Petioles* less than an inch in length, smooth, channelled.

MALE flowers I have found on a separate tree by themselves collected on little lateral, and terminal villous racemes, small, much crowded, olive-coloured. *Calyx* five-toothed. *Petals* five, ovate. *Filaments* five, alternate with the petals, and with them inserted on the receptacle. *Anthers* ovate. *Germ* none. HERMAPHRODITE *racemes* as in the male but less crowded with flowers. *Calyx* superior, five-parted, permanent. *Corol* as in the male. *Filament* short. *Anthers* of two distinct lobes. *Germ* inferior, oval, one-celled, containing a single *ovula*, attached to one side of the cell a little above the middle. *Style* single, very short. *Stigma* capitate. *Berry*, the size of a large olive, obliquely, and transversely oval, smooth, when ripe red, pulp in considerable quantity, the fibrous pores contain a pale coloured acrid, thick juice as in *Semecarpus*, one-celled, one-seeded. *Seeds* transversely oval. *Perisperm* none. *Embryo* transverse. *Cotyledons* conform to the seed, equal. *Plumula* two-toothed, fringed. *Radicle* short, truncate lateral, directly within the umbilicus.

SEMECARPUS. Scherb. gen. n. 501.

Calyx five-parted. ***Corol*** five-petalled. ***Germ*** one-celled, one-seeded, attachment superior. ***Nut*** superior, cordate, cellular, one-seeded, sitting on a large, fleshy pear-shaped receptacle. ***Embryo*** inverse without perisperm.

1. S. *Anacardium. Corom. pl.* 1. *No.* 12. *Willd.* 1. 1476.

Polygamous. ***Leaves*** cuneiform, downy underneath. ***Panicles*** terminal.

Sans. Arushkara, also Bhela.

Beng. Bhela, Bhola-*tuki*, or Bela-*tuki*.

Eng. Marking Nut.

Teling. Nella-jedee.

Anacardium of the Materia Medica.

A tree, bearing male or male-hermaphrodite flowers on one and hermaphrodite on another; which circumstance might remove it from the fifth, to the twenty-third class of the Linnæan system. It is a native of all the mountainous parts of India; flowering time from May to August. Seed ripe in January and February.

Dr. König, my predecessor, who was the first that described this tree, had never met with the male, otherwise so particular a circumstance would not have been omitted by so accurate a describer as the Doctor was.

Trunk straight, covered with grey, scabrous bark, the bark of the younger parts smooth, light ash-coloured, its inner substance contains in crevices, a quantity of white, soft, almost insipid gum. ***Branchlets*** numerous, spreading. ***Leaves*** about the extremities of the branchlets, alternate, petioled, somewhat wedge-formed, or oblong-obovate rounded at the apex, entire, firm above, pretty smooth, yet harsh, whitish underneath; from nine to eighteen inches long and from four to eight broad. ***Petioles*** one and a half, or two inches long, half round. ***Pa-***

nicles terminal, very large, composed of many simple spikes ; that of the male tree much slenderer, but as large, or larger, and with ramouse branches. *Bractes* many, small, caducous. *Flowers* numerous, small, of a dull greenish yellow colour.

HERMAPHRODITE as in the *supplementum plantarum.* Page 25 and 182. *Pericarp* none. *Receptacles* erect, fleshy, pear-shaped, smooth, when ripe yellow, about the size of the nut. *Seed* a single nut resting upon the receptacle, cordate, flattened on both sides, smooth, shining, black ; the cover or shell of the seed is composed of two lamina; the inner one hard, the outer one less so, and leathery; between them are cells which contain the black corrosive resinous juice which has long made them famous. This juice is of a pale milk colour, till perfectly ripe when it becomes black.

MALE FLOWERS on a separate tree, they are smaller than the hermaphrodite.

Calyx, and *Corol* as in the hermaphrodite. *Filaments* five, the length of the petals. *Anthers* much larger than in the hermaphrodite. *Pistillum* none, or small and abortive, and in form of a semi-globular, hairy, glandular body.

The wood of this tree is reckoned of no use, not only on account of its softness, but also on account of its containing much acrid juice, which renders it dangerous to cut down and work upon it. The fleshy receptacle on which the seed rests are roasted in the ashes, and eaten by the natives ; the taste is exceedingly like that of roasted apples. Before roasted they are astringent, and acrid ; leaving a painful sensation on the tongue for some time. The kernels are rarely eaten.

The green nuts well pounded into a pulp make good lime.

The pure black, acrid juice of the cells is employed by the natives externally to remove rheumatic pains, aches,

and sprains. A little is well rubbed over the part affected. But in tender constitutions it often produces inflamation and swelling, doing much more harm than good; but I think where it has not this disagreeable effect, which is generally the case, it is an efficacious remedy. It is universally employed to mark, all sorts of cotton cloth. The colour is improved, prevented from running, and fixed by a mixture of quick lime and water. The juice or resinous balsam, is not soluble in water, and is only diffusable in spirits of wine, for it soon falls to the bottom, unless the menstruum be previously alkalized; the solution is then pretty complete, and of deep black colour. It sinks in but soon unites perfectly with expressed oils. Alkaline livixia act upon it with no better success than plain water.

It is employed by the Telinga Physicians for the cure of almost every sort of venereal complaint, and is commonly prepared as follows:

Take of this black balsam, and expressed juice of garlic, each one ounce. Expressed juice of fresh Tamarind-tree leaves; cocoanut oil and sugar, of each two ounces; mix and boil them for a few minutes. A table spoonful is given to the patient twice a day. I know nothing of the efficacy of this composition.

The bark is mildly astringent, gives out in decoction a deep colour, which dies brown of various shades.

From wounds made in the bark,a dirty looking, brownish soft gum is procured, which dissolves slowly in the mouth without much taste.

2. S. *Cassuvium. R.*

Leaves alternate, lanceolar, entire and very smooth. Nut resting on a depressed fleshy, broad turbinate receptacle.

Cassuvium silvestre. *Rumph. amb.* 1. *t.* 70.

A native of the Moluccas, from thence introduced into

the Botanic Garden at Calcutta in 1798, and in August, 1804, they blossomed for the first time, when they were handsome, small trees, about twelve feet in height, with many smooth ascending branches, and branchlets.

Leaves alternate, short-petioled, lanceolate, entire and very smooth on both sides; length from ten to eighteen inches, and from three to five broad. *Petioles* from one to two inches long, round, and smooth. *Stipules* none. *Panicles* terminal, thin, long-ovate, smooth. *Bractes* minute, caducous. *Flowers* numerous, small, greenish-yellow, and inodorous. *Calyx* saucer-shaped, five-toothed. *Petals* five, ovate, spreading. *Nectary* a yellow fleshy ring round the base of the germ, which becomes the fleshy receptacle of the seed. *Filaments* five, rather broad, length of the germ, inserted round the base of the nectary. *Germ* superior, roundish, one-celled, containing one *ovula* attached to the top of the cell. *Styles* three, spreading. *Stigmas* two-toothed. *Nut* resting on the large smooth, yellow, fleshy, cup-shaped receptacle, obliquely-obverse, reniform, one celled, one valved, considerably compressed, longitudinally striated and wrinkled, colour a brownish black, and of a firm leathery consistence, composed of an exterior, and interior integument, with numerous small cells between. *Seed* single, completely filling the nut, covered with a single brown integument. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, conform to the seed. *Plumula* two-lobed. *Radicle* conical, superior, that is, lodged between the most elevated part of the cotyledons, and at the greatest distance from the umbilicus, or base of the nut.

3. S. *cuneifolia. R.*

Leaves wedge-shaped, short-petioled, villous underneath.

A native of the range of mountains which bounds Hindoosthan on the north, from thence seeds were sent

to the Botanic Garden at Calcutta, where the tree grows slowly; the heat of Bengal being, I presume, too great for this species.

OPILIA. R.

Calyx five-toothed. *Corol* five-petalled. *Nectarial* scales alternate with the *filaments*. *Style* none. *Berry* superior, one-seeded.

O. *amentacea*. *Corom. pl.* 2. *N.* 158.

Teling. Balee-koma.

A small tree, a native of the mountainous parts of the Circars.

Leaves alternate, bifarious, short-petioled, ovate, or oblong, entire, smooth, shining, sometimes very slightly serrulate, about three inches long, and one and a half broad. *Stipules* none. *Aments* axillary, small, erect, before the flowers open, every where closely imbricated with small, peltate, kidney-shaped, pointed, ciliate, caducous three-flowered scales. *Flowers* small, greenish-white, tern. *Calyx*, *perianth* proper, very small, five-toothed. *Petals* five, spreading, oblong. *Nectary*, five short, thick, fleshy, clubbed bodies alternate with the *stamens*. *Filaments* five, spreading, shorter than the petals. *Anthers* ovate. *Germ* superior, oblong. *Style* none. *Stigma* single. *Berry* size of a cherry, globular, juicy, one-seeded.

BOSEA.

Calyx five-leaved. *Corol* none. *Berry* superior, one-seeded.

1. B. *trinervia*. *R.*

Arboreous. *Leaves* oval, pointed, entire, three-nerved. *Male* flowers under the hermaphrodite ones.

A large tree; a native of the Circar mountains. *Bark* pretty smooth, and brown. *Leaves* alternate, bifarious,

short-petioled, ovate, pointed, three-nerved, smooth, entire; when young a little downy, about five inches long, and two and a half broad. *Stipules* filiform, hairy, caducous. *Racemes* axillary, slender, erect, sometimes compound, but generally simple. The hermaphrodite flowers always above the male.

HERMAPHRODITE. *Calyx* or corol five-leaved; leaflets spreading, oval. *Filaments* five, spreading, shorter than the pistil. *Anthers* incumbent. *Germ* superior, ovate. *Styles* two, erect. *Stigmas* simple. *Berry* ovate, size of a cherry, one-seeded.

MALE *flowers* on the same raceme, below the hermaphrodite ones. *Calyx* and *stamina* as above. *Pistil*, not the least rudiment of one.

HYDROCOTYLE. Schreb. gen. n. 457.

Umbel simple. *Involucre* from two to four-leaved. *Petals* entire, *fruit* compressed, gibbous, two-partible.

1. H. *asiatica. Willd.* 1. 1362.

Creeping in shady places. *Leaves* long-petioled, reniform, dentate. *Umbellets* from the joints, two or more together, short-peduncled, three or four-flowered. *Involucre* two-four-leaved.

Codagen. *Rheed. mal.* 10. *t.* 46.

Hind. Thul-kura.

It is common in moist shady places over India, and appears with most luxuriance during the rains, when it blossoms and ripens its seed.

2. H. *rotundifolia. R.*

Filiform, creeping. *Leaves* long-petioled, round, lobate, crenate, smooth. *Umbellets* erect, from eight to ten flowered. *Involucre* of three, four or more minute leaflets.

A small creeping species, found in wet, cultivated

spots in the Botanic Garden at Calcutta during the rains.

VAHLIA. Schreb. gen. n. 452.

Calyx five-leaved. *Corol* five-petalled. *Capsule* inferior, one-celled, many seeded.

1. V. *oldenlandioides. R.*

Annual, erect, ramous. *Leaves* linear, lanceolate. *Peduncles* solitary, two-flowered.

Oldenlandia pentandra. *Willd.* 1. 676. *Retz. obs.* 4. *n.* 64.

A native of cultivated lands on the coast of Coromandel ; it appears only during the cold season.

Stem erect, annual, round, jointed, ramous, a little downy, about a foot high. *Leaves* opposite, sessile, spreading, linear, lanceolate, entire, downy ; about an inch long. *Peduncles* axillary, solitary, erect, rather shorter than the leaves, each bearing two small, yellow flowers. *Petals* nearly as large as the calyx. *Capsule* crowned with the calyx, one-celled, opening at the apex. *Receptacles* two, affixed by the apex. *Seeds* numerous.

I believe König called this plant Cyrilla Oldenlandioides.

2. V. *viscosa. R.*

Annual, sub-erect, ramous, downy, and clammy. *Leaves* lanceolate. *Peduncles* two-fold, very short, one flowered.

Oldenlandia digyna. *Willd.* 1. 674. *Retz. obs.* 4. *n.* 65.

A native of the same places with the former, and appears during the same season.

Stem not so straight as that of the former, less branchy, shorter, more downy, and a little glutinous. *Leaves* opposite, sessile, from lanceolate to linear ; all are entire, pointed, and downy ; from half an inch to an inch long.

Stipules none. *Flowers* paired, axillary, very short-peduncled, small, yellow.

The rest as in the genus.

This is, I think König's *Cyrilla viscosa*.

DAUCUS. Schreb. gen. n. 466.

Corollets sub-radiated, all hermaphrodite. *Fruit* hispid with hairs.

D. *Carota. Willd.* 1. 1389.

Seeds hispid. *Petioles* nerved underneath.

Sans. Grinjana or Gargara.*

Hind. and *Beng.* Gajur.

Persian. Zerduk.

Arab. Istufleen or Gazir.

It is said to be a native of Persia. In India it is only found in a cultivated state.

FERRULA. Schreb. gen. n. 475.

Fruit oval, flat, compressed, with three strias on each side.

F. *Asiafoelita. Willd.* 1. 1413.

Leaves alternately sinuate, obtuse.

Beng. Hing.

Pers. and *Arab.* Unjudan.

Native of Persia. It does not appear that this valuable plant has ever been found in any part of India, or to the east of that country.

LIGUSTICUM. Schreb. gen. n. 478.

Umbelliferous, with both universal, and partial involucres. *Fruit* oblong, five-furrowed on both sides. *Corollets*, equal, all fertile, with petals involute and entire.

* I find no authority for these Sungskrit names.—W. C.

1. L. *Ajowan. R. Fleming in Asiat. Res.* 11. 170.

Annual, erect. *Leaves* supra-decompound, with filiform leaflets. *Ridges* and *furrows* of the seed distinct, and scabrous.

Sans. Bruhmadurbha, Yuvanika, &c.

Hind. & Beng. Ajouan, Ajwan, or Jouan.

This is one of the most useful and at the same time grateful of the umbelliferous tribe. It is much cultivated in Bengal, during the cold season. I never saw it wild.

Root annual. *Stem* erect, the whole plant from one to three feet high; *branches*, alternate, smooth, and slightly striated. *Leaves* sparse; those nearest the base of the plants supra-decompound; the superior, less so; all have smooth, filiform subdivisions, or leaflets. *Umbels* terminal, erect, compound, universal, of from six to eight rays, on rather unequal peduncles, partial, of many rays, on unequal pedicels. *Calyx; involucres* universal, and partial, from five to eight, linear, unequal, shorter than the umbels, and umbellets, permanent. *Proper perianth* superior, most minute. *Corol, universal* uniform. *Corollets* pure white, all equal, hermaphrodite, and fertile. *Proper* of five equal petals, furrowed on the back, and keeled within, with involute apexes and broad waved, rather reflected margins. *Stamens* as long as the petals. *Anthers* reddish. *Fruit* didymous, or two seeds united, of a compressed, broad, ovate form, with five scabrous ridges on each side.

I can scarcely imagine that this very famous Indian plant is unknown to our European Botanists; at the same time I cannot find any one of the whole natural order hitherto described to which I can refer it unless it be *Bunium aromaticum.* I do not find that it was known to Dr König, nor did I ever see it but in Bengal.

The seeds, like those of caraway, have an aromatic smell, and warm pungent taste; they are much used by

both natives and Europeans, for culinary, and medicinal uses; they are among the smallest of the umbelliferous orders, and are to be met with in every market in India.

2. L. *diffusum. R.*

Annual, diffuse. *Leaves* decompound, and supra-decompound. *Furrows* of the seeds deep, and smooth. *Involucres*, and *involucles* with membranous ciliate margins.

Beng. Junglee-ajouan.

It is found wild in the vicinity of Calcutta, during the cold, and the beginning of the hot season; it delights in shady moist places.

Root ramous. *Stems* and *branches* diffuse, flexuose, striated, dichotomous, from one to two feet long, slightly hairy. *Leaves* alternate, long-petioled, decompound, and supra-decompound, divisions variously formed, and jagged, a few small hairs over them and the petioles. *Umbels* leaf-opposed, and terminal, compound. Universal and partial of from twelve to twenty-four rays, on nearly equal peduncles, and pedicels. *Calyx; involucres* universal and partial, of from six to eight, sub-membranous, linear-lanceolate, ciliated, spreading, reflected leaflets. *Perianth, corol,* &c. as in L. ajowan. *Fruit* of a compressed, rounded shape, with five smooth ridges on each side.

The seed is used as a medicine for cattle.

CUMINUM. Schreb. gen. n. 483.

Fruit ovate, striate. *Umbellets* and *Involucres* four-cleft.

C. Cyminum. Will. 1. 1440.
Hind. and *Beng.* Zeera or Jeera.
Sans. Jeera, Jeeruka.

Arab. Kimoon.

A Native of Persia, &c. and the western parts of Asia.

PHELLANDRUM. Schreb. gen. n. 485.

Umbelliferous, no universal involucre; partial one, many-leaved. *Florets* equal, all fertile. *Fruit* ovate, smooth, crowned with the calyx, and styles.

P. *stoloniferum.* R.

Stoloniferous, erect. *Inferior leaves bipinnate; superior* quinate, and ternate; *leaflets* lanceolate, serrate.

Beng. Pan-turasee.

A native of Bengal, and found flourishing in, and on the margins of sweet water, about the beginning of the hot season.

Roots running, fistulous, jointed, emitting fibres and long creeping stolones from the joints. *Stem* erect, striated, fistulous, winding; from two to four feet high. *Leaves,* the inferior ones composed of one or two lateral pairs of ternate, and a terminal quinate portion; the superior ones, quinate and ternate. *Leaflets* lanceolate, smooth, serrate. *Umbels* leaf-opposed, long-peduncled, convex, many-rayed. *Umbellets* convex, many-rayed with involucles of many shortish, linear leaflets. *Calyx; perianth* proper of five, large, conspicuous toothlets. *Corol proper,* five-petalled, uniform, white, ovate, with long, inflected points. *Fruit* obovate, smooth, crowned as in the genus.

I do not find that the natives make any use of any part of this plant; its taste, both seeds and leaves is somewhat aromatic, but not palatable.

CORIANDRUM. Schreb. gen. n. 488.

Corol radiated. *Petals* inflex, emarginate. *Universal involucre* one-leaved; *partial ones* halved. *Fruit* spherical.

C. *sativum. Willd.* 1. 1448.
Sans. Dhunyuka.
Beng. Dhunya.
N. Danga.
Cultivated over India during the cold season.

SESELI. Schreb. gen. n. 492.

Umbelliferous; *umbellets* globular; *universal involucre* none, *partial one* subulate. *Fruit* ovate, striated.

S. *bengalensis. R.*

Erect. *Leaves* bipinnate, or more; *leaflets* gashed. *Umbels* leaf-opposed. *Involucrets* of several, subulate leaflets.

Annual. It appears during the dry season upon the cool, moist, shady banks of ponds, &c.

Root annual. *Stem* erect, winding, piped, smooth, about a foot high. *Leaves* bipinnate, or more. *Leaflets* smooth, gashed, variously formed. *Umbels* leaf-opposed, short-peduncled, rigid, naked, from six to twelve-rayed, *umbellets* subglobular, short-pedicelled. *Involucrets* linear, longer than the umbellets. *Corollets* all fertile, uniform. *Petals* ovate, inflected. *Fruit* nearly globular, crowned.

ANETHUM. Schreb. gen. n. 496.

Umbelliferous, with no involucre nor involucel. *Corollets* equal, all fertile, with entire involute petals. *Fruit* somewhat ovate, striated.

1. A. *Pannori. R.*

Annual, erect, ramous. *Leaves* supra-decompound. *Umbel* of ten or twelve unequally elevated radiæ. *Fruit* oblong, deeply-furrowed, but not winged.

Beng. Panmuhuree.
Sans. Mudhoorika.
Mayuri. See *Asiat. Res.* 11. 156.
Like *Sowa* this plant is cultivated in various parts of Bengal during the cold season for the seed, which the natives eat with their betle and also use in their curries. Seed time the close of the rains, about the end of October. Harvest in March, when the plants perish.

Root white, nearly fusiform, and almost simple. *Stem* erect, ramous, from the base to the top, the branches also erect, round and smooth, with a uniform, pale, glaucous tinge, and not striated as in *Dill*, and *Sowa*, the general height of the whole plant from two to four feet. *Leaves* alternate, scattered, supra-decompound, divisions round, tapering, smooth and filiform, but by no means so numerous as in *A. Fœniculum* which this plant resembles. *Umbels* terminal, rather concave, but not regular, the convex, from ten to thirty-flowered umbellets, of which there are generally from ten to twenty, standing on peduncles of very unequal lengths. *Flowers* small, bright, deep yellow. *Petals* long, ovate, with their apices rolled in. *Stamens* longer than the petals. *Germ* oblong. *Styles* scarcely any. *Seeds* exactly as in *Anethum Fœniculum* and with the same taste.

The seeds of this plant, for which it is cultivated, possess a pleasant, warmish, very sweet taste, and aromatic smell so much like sweet fennel that I should certainly have thought them at most nothing but varieties of the same species, if I had not had both growing before me for several years in the Botanic Garden at Calcutta where plants of *A. Fœniculum* reared from Europe seed do not blossom till the second year, during which period the leaves are bifarious, infinitely larger and more divided than in *Panmuhuree*, which is an annual plant of only four or five months duration with the leaves at all times scattered, fewer and more remote.

From my *Anethum Sowa*, *Panmori* differs very conspicuously in many respects, but the best mark is in the seeds. In this they are longer, less flattened and without any membranaceous rim, or border. In that, much flattened with a thin margin, like that of *A. graveolens.*

2. A. *Sowa. R.*

Annual. *Leaves* supra-decompound. *Umbel* of from five to fifteen radii, equally elevated. *Seeds* flat, with a membranous margin and three ribs on the back.

Sans. Mishreya.

Beng. Sowa, shuloopa, soolpa.

A native of Bengal, where it is cultivated for the seeds, which are much used for culinary and medicinal purposes. Time of culture the cold season.

Root annual, in fact of only a few months duration. *Stem* winding, ramous, smooth, striated with deeper and lighter green, and covered with a whitish bloom ; from two to three feet high. *Leaves* alternate, petioled, decompound, and supra-decompound, *leaflets* filiform, as in *Fennel. Petioles*, their lower half sheathing. *Umbels* terminal, convex, without involucres or involucels. *Calyx, proper*, scarcely any. *Corol, universal,* uniform. *Corollets* yellow, all fertile and equal. *Proper,* petals ovate-oblong, inflected. *Stamens* longer than the petals. *Germ* beneath, obovate. *Styles* scarcely any. *Fruit* oval, compressed, composed of two seeds each, with three ridges on its outside, and surrounded with a membranaceous margin.

The seeds are to be met with in every market over India, they are much used by the natives in their curries, and also for medicinal uses.

3. A. *trifoliatum. R.*

Annual. *Leaves* ternate. *Seeds* reniform, slightly striated. A native of the Circar vallies ; not cultivated.

APIUM. Schreb. gen. n. 499.

Involucre one or more leaved. ***Petals*** equal. ***Flowers*** all fertile. ***Fruit*** small, gibbous, ribbed. ***Style*** deflexed.

Annual, glaucous, villous, superior leaflets filiform both general and partial about six-leaved.

Beng. Chanoo, also Radhooni.

Hind. Ujmood, Ujmud.

I have only met with this plant in its cultivated state and it is often raised in our Gardens in India as a substitute for parsley, *A. petroselinum.* It is cultivated over many parts of Bengal during the cold season, for the seed only, which the natives use in diet, and medicine; the leaves they make no use of.

Root annual, white, penetrating deeply into the soil. ***Stem*** erect, flexuous, glaucous, slightly villous. ***Branches*** numerous, and like the stem; height of the whole plant about three feet. ***Leaves*** alternate, petioled, decompound by ternary. ***Leaflets,*** of the lower leaves broad, variously and deeply cut; of the superior ones narrower, ever to linear, and often simple. ***Umbel, universal,*** generally of about six spreading rays; in luxuriant plants these are sometimes proliferous; ***partial,*** of from twelve to twenty. ***Involucre*** and ***Involucels*** of about six villous subulate leaflets. The first shorter than the rays; the latter of nearly the same length. ***Flowers*** numerous, all fertile, white. ***Perianth*** scarcely any. ***Petals*** ovate, with a long, taper, inflected apex. ***Seed*** small, ovate, villous, gibbous, and three-ribbed on the back.

PENTANDRIA TRIGYNIA.

RHUS. Schreb. gen. n. 502.

Calyx five-parted. *Corol* five-petalled. *Germ* superior, one-celled, one seeded, attachment, base and vertici. *Drupe* one-seeded. *Embryo* inverse, without perisperm.

1. R. *succedaneum. Willd.* 1. 1497.

Arboreous. *Leaflets* five pair, entire, oblong-lanceolate. *Petioles* simple. *Berry* oblique.

Arbor vernicifera spuria, &c. *Kœmpf. Amœn.* 794. *t.* 795.

A small tree, in blossom, was received from Dr. Berry at Madras, into the Botanic Garden at Calcutta in April 1801, which came originally from China. It had not in March 1809 attained a greater height than about ten feet, so slowly does it grow, but it blossoms annually during the hot season and produces an abundance of fruit.

Trunk short, with but few, ascending *branches*, covered with smooth ash-coloured *bark*. *Leaves* about the ends of the branches, alternate, unequally pinnate, from six to twelve inches long. *Leaflets* from four to six pair, opposite, obliquely broad-lanceolate, long, taper-pointed, drooping, entire, perfectly smooth on both sides; from three to four inches long, and about one inch broad. *Petioles* round, and smooth. *Panicles* axillary or from the base of the naked branchlets of the present year's shoots, spreading, ovate, very ramous. *Flowers* small, very numerous, short-pedicelled, yellow. *Bractes* small, one-flowered. *Calyx*, here it may be said to consist of five-leaflets. *Petals* five, oblong, first spreading, but soon becoming reflected back over the calyx. *Nectary* a five-lobed cup, as in the *Rhamni*, between the base of the germ, and the insertion of the petal and stamens. *Filaments* five, the length of the corol, erect, inserted, alternate with

the petals. *Anthers* ovate-oblong. *Germ* superior, conical, one-celled, containing one *ovula* attached from its apex to the bottom of the cell. *Style* short. *Stigma* three-lobed. *Drupe* the size of a pea, obliquely-reniform.

2. R. *Bucki-amela. R.*

Arboreous. *Leaves* pinnate; *leaflets* five-pair, ovate, serrate, villous; exterior half of the petiole winged. *Panicle* terminal. *Berries* orbicular, compressed, viscid.

Bucki-amela is the name under which it was sent from Nepal.

October, 1800. There are now many of the young trees in the Botanic Garden, in full blossom. The seeds were received from Nepal about two years ago. At present they are from six to twelve feet high, with an erect, soft, woody stem, and a few simple, ascending branches.

Note, in 1812. They scarcely ever grow larger.

Leaves alternate, pinnate, from one to two feet long. *Leaflets* from four to six pair, opposite, subsessile, ovate, oblong, serrate, pointed; of a thick, firm texture; villous on both sides, and whitish underneath; from four to six inches long, and from two to three broad. *Petioles* round, somewhat villous, the exterior joint or two often winged. *Panicles*, a very large, expanding one terminates the branches, and single smaller ones spring from the exterior axills. *Flowers* numerous, small, pale yellowish green. *Calyx, corol, stamina and pistillum* as in the genus; the germ contains only a single *ovula* from the apex of which the umbillical cord proceeds to the bottom of the cell where its attachment is. *Drupe* the size of a pea, orbicular, compressed, when ripe, greenish-white, with a tinge of yellow near the apex and somewhat clammy. *Nut* smooth, dark brown, much compressed.

The *berries* or little *drupes* are covered with a very small portion of a pulpy envelope which is of a sharp, acid taste, and in Nepal, I am told, is much esteemed.

3. R. *parviflorum. R.*

Subarboreous ; all the tender parts very downy. *Leaves* ternate ; *leaflets* sessile, obovate, anterior margins serrate-crenate. *Panicles* terminal.

A small bushy tree, a native of Nepal from thence introduced into the Botanic Garden at Calcutta where it blossoms during the rainy season.

SAMBUCUS. Schreb. gen. n. 505.

Calyx five-parted. *Corol* five-cleft. *Berry* three-seeded.

S. *Ebulus. Willd.* 1. 1494.

Herbaceous. *Leaflets* from seven to nine, sessile, lanceolate, finely serrate. *Stipules* quatern (four on each side,) leafy, unequal. *Cymes* from three to six-parted.

A native of Rungpore in Bengal. It flowers during the rainy season. Its taste is simple herbaceous and has nothing of the ungrateful smell of the Europe plant. It may be a different species, though I cannot at present fix on a different character.

TAMARIX. Schreb. gen. n. 510.

Calyx five-parted. *Corol* five-petalled. *Germ* superior, one-celled, many seeded, attachment parietal. *Capsule* one-celled, three-valved. *Seed* comose. *Embryo* centrifugal ; no *perisperm.*

1. T. *indica. Kön. Mss.*

Arboreous. *Panicles* terminal, racemed. *Style* single and short. *Anthers* double, and crowned.

T. *Chinensis. Lour. Cochin Ch.* 228.

T. *Articulata. Vahl. Symb.* 2. 48. *t.* 32. *Willd.* 1. 1498.

Sans. Jhavuka.

Beng. Jhou, Jhouca, Jhaoo.

This species grows to be a middling tree, is a native of sandy islands in large rivers or on their sandy banks, or in the vicinity of the sea, between Upara and Pantacota, on the coast of Coromandel. It flowers during the latter part of the rainy season.

Trunk often as thick as a man's body, from six to twelve feet high, generally crooked. *Bark* scabrous. *Branches* numerous spreading in every direction; their bark greenish, with brown scabrous specks. *Leaves* minute, sessile, pressing close to the *branchlets;* on the extremities of the young shoots, imbricated; on those more advanced in size, more remote, occasioned by the increasing size of the branchlets. *Flowers* small, white, exceedingly numerous, collected on many terminal racemes forming a very large, beautifully drooping panicle. *Bractes* leaf-like, solitary, one-flowered. *Filaments* twice the length of the petals. *Anthers* four-lobed, with a terminal point. *Style* short, single, more than half way three-cleft; *divisions* or *stigmas* recurved, feathery.

When it meets with a good soil, it has a very elegant appearance, particularly when in flower.

2. T. *dioeca. R.*

Dioecous, arboreous. *Leaves* short, obliquely truncated. *Panicles* terminal. *Male flowers* pentandrous. *Female* with five abortive stamens.

Beng. Lal Jhou.

Picpula. *Asiat. Res.* 4. *p.* 268.

A native of the islands in the Ganges and of its banks above Sook-saugor, where it blossoms during the rains, at which period, in some situations, little more than the tops of the plants are to be seen above water. In our gardens it is in flower the greater part of the year and is highly ornamental.

Trunk short, covered with dark-coloured, cracked bark. *Branches* very numerous, spreading in every direction

with their extremities drooping. *Leaves* tubular, obliquely truncated, pointed, smooth; in fact, they appear more like joints of the bark than leaves. *Spikes* terminal, simple, cylindric, often drooping, and so numerous as to compose the most beautiful drooping panicles on the extremities of the branches and branchlets. *Flowers* very numerous, sessile, small, rose-coloured, inodorous. *Bractes* triangular, acute, one-flowered.

MALE FLOWERS. *Calyx* five-leaved. *Corol* five-petalled. *Petals* linear oblong, emarginate. *Filaments* five, longer than the petals. *Anthers* purple, two-lobed, with a projecting gland between them. *Pistillum* nothing more in all the flowers I examined, than a three-lobed gland in the centre of the flower.

FEMALE HERMAPHRODITE FLOWERS on a separate plant.

Calyx as in the male. *Petals* rather broader than in the male. *Filaments* five, the length of the germ. *Anthers* sagittate, glands without the appearance of pollen. *Germ* three-lobed. *Styles* three, longer than the corol. *Stigmas* clavate, recurved, retuse. *Capsules* conical, three-sided, one-celled, three-valved, hid in the withered calyx, and corol. *Seeds* numerous, compressed, seemingly imbricated.

PHARNACEUM. Schreb. gen. n. 517.

Calyx five-leaved. *Corol* none. *Capsule* three-celled, many seeded.

1. P. *Mollugo. Willd.* 1. 1508.

Annual, procumbent. *Leaves* verticelled, lanceolate; *peduncles* lateral, one-flowered. *Sterile filaments* alternate with the stamina; *anther* twin; *capsule* subcylindric. *Seeds* with a reflected filament.

Alcine erecta. *Burm. Zeyl.* 13. *t.* 7.

Molluga spergularia sp. plant. 131. *Burm. flor. Ind.* 3. *t. s. f.* 4.

Beng. Ghima Sag, or Shak. Shak means a pot herb.

Common over India, generally a weed in gardens during the cold season.

2. P. *pentagynum. R.*

Annual, prostrate, dichotomous, hoary with stellate down. *Leaves* opposite, round. *Flowers* axillary.

Beng. Doosera-sag.

It appears during the cold and the beginning of the hot season, on dry land that has lately been, or is in cultivation.

Root perpendicular, seems biennial. *Stem* none, but numerous, alternate, jointed, dichotomous branches, spreading close on the ground, they are round, covered with soft, stellate pubescence, and from one to two feet long. *Leaves* opposite, petioled, obovate, or roundish, with smaller leaves in their axills; all entire and, like the branches, petioles, &c. hoary with stellate down. The *flowers* stand on the upper side of the branches between the insertions of the leaves, from two to six together, short-peduncled. *Calyx* five-leaved, the outside covered with stellate down, permanent. *Corol* none. *Filaments* generally five, though sometimes more, even as far as ten, short, inserted round the base of the germ. *Anthers* two-lobed. *Germ* above, conical, five-sided, five-celled, five-valved opening from the apex. *Seeds* numerous, reniform, ornamented with regular lines of elevated points, inserted by a large white vesiculated umbilicus to the bottom of the capsule which is continued in a seemingly superfluous white filament reflected over the seed.

The tender shoots are used by the natives in their curries.

It has the habit and appearance of *Glinus lotoides* or *dictamnoides*, but the number of stamens and total

want of the nectary or corol forbid my considering it as even a species of that genus. I have repeatedly examined the flowers of different plants at different periods and places without ever being able to discover any thing like a corol or nectary, so that I must consider this a non-descript or *Glinus lotoides* itself, and that the former descriptions thereof have been inaccurate.

BASELLA. Schreb. gen. n. 520.

Calyx seven-cleft, with the two opposite divisions broader; at last it produces a berry. *Seed* one.

B. *alba. Willd.* 1. 1514.

Perennial, twining. *Leaves* cordate, smooth, entire, fleshy.

Batsalla hur*a*, or Matto-batsalla, are its Telinga names when cultivated; and Alla-batsalla, when wild.

Po*i*, the Bengalee, and Hindoo name of the cultivated variety and bun-po*i* when wild.

Gandola alba. *Rumph. amb.* 5. *p.* 417.

The natives of the Coromandel coast reckon five varieties of this; three of these are cultivated, and two wild; the wild sorts are,

1st. Yerra, or Poha-batsalla, the Telinga name of the red wild Batsalla.

R*u*cta bun-po*i* of the Bengalees.

Basella *rubra. Willd.* 1. 1513.

Gandola rubra. *Rumph. amb.* 5. 417. *t.* 154. *f.* 2. *bad.*

Is found wild in hedges, &c. twining round other plants to a considerable extent, the stems, and branches smooth, as thick as a quill, and deeply tinged red.

2nd. Alla-batsalla, above mentioned, grows with the last in hedges, and differs from it only in the colour of the stems, and branches; here they are always pale green.

The cultivated sorts are;

1st. Yerra, or red garden Batsalla.

It differs from the wild red in being more luxuriant; it is not much cultivated.

2nd. Mattoo, or white Garden Batsallà.

Poi, of the Hindoos and Bengalees.

Like the last, it differs from the wild white only in being more luxuriant, according to the nature of the soil, and is much cultivated. The above two are generally raised from the seeds.

3d. Pedda, or large Batsalla of the Telingas.

B. *lucida, and cordifolia. Willd.* 1. 1514.

Poi-sag of the Hindoos and Bengalees.

Basella. *Rheed. Mal. 7. t.* 24.

This is much cultivated, and always from slips taken from the old plants; it grows to a great size running over extensive, trellises, erected for the purpose, and generally about the houses of the natives, where its numerous, large, succulent branchlets and leaves form a most agreeable shade to protect them from the heat of the sun. This variety is also more used as a pot herb by the natives, than any of the other four, though all are reckoned equally wholesome.

I think the whole may be reckoned varieties of one species, and probably *Basella Japanica Burm. ind. t.* 39. *f.* 4. is nothing more than from a stunted specimen of one of these varieties.

EVOLVULUS. Schreb. gen. n. 524.

Calyx five-leaved. *Corol* companulate, plaited. *Germ.* *Capsules* superior, two-celled cells, two-seeded.

1. E. *alsinoides. Willd.* 1. 1517.

Perennial, diffuse, hairy. *Leaves* subsessile, oblong,

hairy. *Peduncles* from one to three-flowered ; *fruit* drooping.

2. E. *hirsutus*. *Willd.* 1. 1517.
Vistnu-clandi. *Rheed. Mal.* 11. *t.* 64.
Anagallis hirsuta minor. *Burm. zeyl. t.* 6. *f.* 1. *and t.* 9. *f.* 1. seems also the same plant.

Is a native of the various parts of India, and in blossom most part of the year.

Root perennial. *Stem* scarcely any, but numerous, very slender, cespitose, round, bifarious branches, which, while young, are covered with long, soft, white hairs. *Leaves* alternate, bifarious, subsessile, oblong, entire, hairy on both sides. *Peduncles* axillary, solitary, longer than the leaves, jointed near the middle, where two opposite, lanceolate bractes are inserted ; from one to three-flowered, but one is the most common number ; while in blossom erect, afterwards drooping. *Calyx* of five lanceolate, hairy leaflets. *Corol* rotate-campanulate, margin almost entire, deep bright blue. *Stamens* crowning the mouth of the very short tube. *Germ* ovate. *Styles* two, but each three-fourths two-cleft. *Stigmas* simple. *Capsule*, and *seed* as in *Convolulus*.

3. E. *pilosus*. *R.*

Perennial, diffuse, hairy. *Leaves* sessile, linear-lanceolate. *Peduncles* three-flowered, and amply bracted. *Style* single, two-cleft.

A native of Hindoosthan. In the Botanic Garden at Calcutta, it is in flower most part of the year.

Root perennial. *Stem* scarcely any, but several, somewhat ligneous branches spread close on the ground ; tender parts clothed with soft, appressed hairs. *Leaves* alternate, remote, sessile, linear-lanceolate, hairy. *Peduncles* axillary, very short, hairy, three-flowered. *Flowers* nearly sessile on the common peduncle. *Corol* short-

campanulate, white ; margins crenate. *Style* single, two-cleft.

4. E. *angustifolius. R.*

Diffuse, filiform, every part clothed with brown, sericeous pubescence. *Leaves* sessile, linear-lanceolate. *Peduncles* longer than the leaves, from one to three-flowered. *Styles* two, each two-cleft.

A native of the Moluccas, agreeing well with Brown's figure of *Convolvulus herbaceous erectus*, 152. *t.* 10. *f.* 2. except that his plant is erect, and nearly smooth ; whereas this spreads on the ground, and is very villous. I therefore think it must be different.

PENTANDRIA PENTAGYNIA.

ARALIA. Schreb. gen. n. 525.

Involucre to the umbellet. *Calyx* five-toothed. *Corol* five-petalled. *Germ* five-celled ; *cells* one-seeded, attachment superior. *Berry* inferior, five-seeded. *Embryo* inverse and furnished with a perisperm.

1. A. *digitata. R.*

Subarboreous, unarmed. *Leaves* digitate. *Leaflets*, broad-lanceolate, entire. *Panicles* terminal.

Unjala. *Rheed. Mal.* 7. *t.* 28.

Hind. Dain.

A native of the Circar mountains and lately found by Dr. Buchanan about Lukshmeepoor. Flowering time the rainy season. Young trees are in the Botanic Garden at Calcutta, where they grow luxuriantly, but always continue bushy, somewhat scandent, and from the lower branches, many roots continually descend into the ground or embrace other trees. The bark is smooth, and on the young shoots of a bright deep green colour.

Leaves round the ends of the young shoots digitate.

Leaflets petiolated, generally five or six, and of different sizes, oblong, pointed, entire, smooth on both sides, the shortest about the length of the common petiole. *Petioles* stem-clasping, round, smooth. *Petiolets* the largest about an inch round, and smooth. *Umbellets* globular, numerous, inserted alternately on many long, terminal, leafless ramifications the whole forming a large open panicle. *Flowers* very numerous, small. *Calyx; involucre* of the globular umbellet, scarcely any. *Perianth* a five-sided marginal elevation round the germ. *Corol; petals* five, inserted on the five marginal sides of the perianth. *Stamens* five. *Germ* inferior, five-celled, with a single ovula in each attached to the top of the cell, &c. exactly as in the ripe state. *Berry* round, size of a small pea, smooth, yellow, five-celled. *Seed* solitary, attached to the top of the cell immediately under the remains of its stigma, straight and sharp on the inner edge, convex and broad in the interior. *Integument* single, white. *Perisperm* conform to the seed, entire, pure white, of a firm and rather tough consistence. *Embryo* inverse, scarcely half the length of the perisperm. *Cotyledons* two, linear. *Radicle* cylindric, superior, immediately within the umbilicus.

In Hedera *terebinthacea* which this species most resembles, the style which is single, is as long as the filament, and ends in a single acute stigma; consequently they cannot be the same, though in the *Banksian herbarium* I believe my plant is there marked *H. terebinthiana.*

2. A. *umbraculifera.* R.

Arboreous, unarmed. *Leaves* pinnate; *leaflets* numerous; *inflorescence* terminal.

Papaja silvestris. *Rumph. Amb.* 1. *p.* 149. *t.* 53. *f.* 1.

A native of the Molucca Islands, from thence introduced into the Botanic Garden at Calcutta in 1798; where

it blossoms in April, but has never ripened its fruit in Bengal.

Trunk straight, perfectly simple, about twelve feet high, and eighteen inches in circumference, towards the top marked with the large cicatrices of the fallen leaves, otherwise perfectly smooth, and ash-coloured. *Leaves* round the top of the plant, below the inflorescence, unequally pinnate, drooping, about six feet long. *Leaflets* about twenty pair, opposite, subsessile, drooping, ovate-lanceolate, margins waved and slightly serrate, very smooth on both sides, upper surface shining; length from four to eight inches, and from two to three broad. *Petioles* smooth, sharp on the upper edge, jointed at the insertion of the leaves, and then much swelled. *Inflorescence*, I will call it an immense terminal pannicle issuing as in *Corypha umbraculifera*, from the apex of the simple *Papaya*-like stem and composed of numerous, primary, diverging, compound branches, of from three to four feet in length, while the numerous diverging branchlets thereof are from six to nine inches long, and support numerous alternate diverging pedunclesof small, globular heads, of from six to twelve small, sessile, greenish, stellate flowers. *Bractes* minute. *Involucres* also very minute. *Calyx* superior, obscurely five-toothed. *Petals* five, broad-lanceolate, spreading. *Filaments* shorter than the petals, spreading. *Anthers* ovate. *Germ* inferior, crowned within the insertion of the petals and stamina, with a convex, grooved, coloured gland; from its centre rise the five styles, which are in some degree coalesced, and shorter than the corol. *Stigmas* five, distinct, and simple.

LINUM. Schreb. gen. n. 528.

Calyx five-leaved. *Corol* five-petalled. *Capsule* superior, from five to six-valved, from ten to twelve-celled, with one seed in each cell.

1. L. *usisatissimum*. *Willd*. 1. 1533.

Annual, ramous. *Calyx* and *capsules* mucronate. *Petals* crenate. *Leaves* alternate, lanceolate.

Sans. *Utusee.*

Hind. Tisi.

Beng. Mushina.

Much cultivated over the Northern parts of India for the seed, from which the Hindoos extract the oil. They make no use of any other part of the plant.

2. L. *trigynum*. R.

Shrubby. *Leaves* alternate, oval. *Filaments* united at the base with alternate sterile bristles. *Styles* three. *Capsules* six-valved, twelve-celled.

Hind. Gool ashruf.

This beautiful plant I have only met with in the garden of the curious about Calcutta, though it is indigenous in Hindoosthan, and the eastern parts of Bengal. Flowering time, the cold season. It grows readily from bits of the root; consequently, is easily propagated; it is indeed, a troublesome, though beautiful weed.

Stem or rather *branches* numerous, sub-erect, the whole shrub about two or three feet high. *Bark* ash-coloured. *Leaves* alternate, short-petioled, ovate-oblong, with a bristle-like point, the larger are most minutely serrate toward the apex; both sides smooth, size very various. *Stipules* minute. *Flowers* solitary, peduncled, large, of a bright, deep, rich yellow colour, inodorous. *Bractes* none, unless some small floral leaves which surround the peduncles near the base may be so called. *Calyx* five-leaved; *leaflets* lanceolate, acute, smooth, erect, permanent. *Petals* five, claws the length of the calyx, forming as it were a tube. *Border* flat, round, entire, inserted below the bristles, into the ring formed round the germ by the union of the base of the filaments, on the outside of the neck of each petal are two small toothlets. *Filaments*

five, as long as the calyx, becoming broad towards the base, and then united with five, small, intermediate bristles placed between them. *Anthers* sagittate. *Germ* superior, globular, six-celled, with one *ovula* in each, attached to the top of the axis. *Styles* three, considerably longer than the stamens. *Stigma* headed, undivided. *Capsule* globular, smooth, size of a large pea, six-celled, six-valved. *Seeds* solitary, reniform.

This plant is highly ornamental. *Miller's* two *figures in plate* 268, are not unlike it in any respect; yet I think it is evident they cannot be the same; it seems more nearly allied to *Linum*, for in all respects the characters agree perfectly, except in the three *styles* and *capsule*. I have therefore called it *Linum trigynum*.

AEGELATIS. Brown.

Calyx cylindric sulcated, five-toothed. *Petals* five and with the five filaments, united at the base. *Germ* superior, one-celled, one-seeded, attachment from the base of the cell to the apex of the ovula.

A. *rotundifolia. R.*

Leaves alternate, orbicular; *petioles* long, sheathing and winged.

A small ramous shrub found with *Rhizophora*, &c. growing on the banks of the salt-water creeks which intersect the lower part of the delta of the Ganges. Flowering time December.

Stem scarcely any, but many ascending, smooth, dichotomous branches and branchlets. *Leaves* alternate, petioled, orbicular, entire, glossy, most finely veined, from two to three inches each way. *Petioles* as long as the leaves, sheathing, broad-winged, smooth; when they drop, annular, permanent marks are left in the branches. *Racemes* axillary and terminal, the latter dichotomous

or even subpanicled, round, and smooth. *Flowers* numerous, pretty large, pale yellow, short-pedicelled. *Bractes* three to each flower, oval, sheathing, clammy. *Calyx* cylindric, sulcated, clammy, mouth five-toothed. *Corol*, it may be called one-petalled, with filaments inserted on the mouth of the tube; or five-petalled, and those inserted on the tube, formed by the base of the filaments, *lamina* oblong, recurved over the mouth of the calyx. *Filaments* five, shorter than the corol. *Anthers* linear-oblong. *Germ* superior, oblong, five-grooved, closely embraced by the tube, formed by the stamina and petals, one-celled, containing a single *ovula*, pendulous at the end of a long umbilical cord which rises from the bottom of the cell. *Styles* five, rather longer than the Stamina. *Stigmas* large.

ALDROVANDA. Schreb. gen. n. 529.

Calyx five-parted. *Corol* five-petalled. *Capsule* superior, five-valved, one-celled. *Seeds* longitudinally affixed to the inside of the valves of the pericarp.

A. *verticillata. R.*

Twining. *Leaves* verticelled, wedge-shaped.

Beng. Malacca-jhanjee.

Found swimming on ponds of water over Bengal during the cold and hot season.

I have never seen it in any other form than that of detached pieces from one to three inches long, sometimes ramous, sometimes simple. The *stems* are round and smooth with verticells of six or eight leaves at every quarter of an inch or less.

Leaves sessile, verticelled, wedge-shaped, ending in four or five bristly horns of nearly the same length; over the insertion of the middle pair is inserted a crescent-shaped, winged utricle, the body of which is inflated, and

serves to keep the plant suspended on the water. *Pedunc-cles* axillary, solitary, about the length of the leaves and their horns, one-flowered. *Calyx, corol,* &c. as in the genus except that here the seeds are numerous.

DROSERA. Schreb. gen. n. 531.

Calyx five-cleft. *Corol* five-petalled. *Capsule* superior, one-celled opening into five valves at the top. *Seeds* numerous.

D. *Burmanni. Willd.* 1. 544.

Scapes axillary. *Leaves* radical, cuneate, spatulate, ciliate, pressing close on the ground in a circle. *Stipules* petiolary, varicose, from three to six-cleft.

Ros solis zeylanica, &c. *Burm. zeyl. t.* 94. *f.* 2.

Native of Coromandel, Ceylon, &c.

D. *indica. Willd.* 1. 1546.

Stems ramous, leaf-bearing. *Leaves* linear, ciliate.

Ros solis ramosa. *Burm. zeyl. t.* 94. *f.* 1.

Araka puda. *Rheed. Mal.* 10. *t.* 20.

A native of Coromandel, &c. Flowering time the cold season.

CLASS VI.

HEXANDRIA MONOGYNIA.

URAŃIA. Schreb. gen. n. 539.

Calyx a common spathe. *Corol* six-petalled. *Germ* three-celled. *Ovula* numerous; *attachment* septal. *Capsule* inferior, three-celled, three-valved. *Seeds* in two rows, axilled. *Embryo* centripetal, and furnished with a perisperm.

U. *speciosa. Willd. 2. p. 7.*

Ravenalia madagascariensis. *Sonner. it. ind.* 223. *t.* 124-5 and 6.

In 1802 three plants of this elegant tree were brought from the Island of Mauritius by Capt. Tennant to the Botanic Garden at Calcutta. They were planted in different soils, and situations. That which was in a very moist place, and in a rich brownish black soil, throve more luxuriantly than the other two, though in a soil equally rich but lighter coloured, much higher and drier; the former flowered for the first time about the close of 1806 and again in September, 1807, when the accompanying and following description was made. The seeds of the first crop of flowers ripened in November, 1807.

Trunk of the tree now in flower, simple, and straight, eighteen inches to the leaves, and thirty-six in circumference, round, and marked with the circular impressions

of the leaves that have fallen off. *Leaves* cauline, bifarious, alternate approximating, petioled, erect when they first appear, and in all directions from that to diverging when about to decay, like the ribs of a semicircular fan, linear, oblong, nearly truncate at both ends, very smooth on both sides, veins simple, diverging in a waving line, length about six feet and the breadth from two to three. *Petioles* about eight feet long, sheathing, a deep groove runs along the upper edge, except for two or three inches at the apex; under side round, and smooth. *Spadix* axillary, solitary, much shorter than the petioles; in our young trees many leaves intervene; bifarious, branches simple. *Spathes*, common, three or four, alternate, embracing the stalks of the spadix, which are mostly hid in the groove of the next petiole below. Partial spathes about twelve, cuneiform, from twelve to twenty-four inches long, the inferior being about twice the length of the uppermost, each enclosing about ten flowers in each side, every one of these flowers is also embraced by its own proper spathe. *Flowers* large, white, sessile, alternate in two rows on the upper side of the branches of the spadix, before expansion, imbricated in a horizontal line; when expanded, erect, inodorous; while in blossom the spathes are all completely filled with a super-abundance of clear, gelatinous matter. *Calyx* no other than the spathes already described. *Corol* six-petalled, three inner and three outer, all nearly ensiform, straight, and of a firm rigid texture, five of them are nearly equal in size; the sixth (one of the inner three) much smaller, the other two of this series adhere lengthways by their margins, overlapping each other, which may have occasioned the corol to have been called *five-petalled*, but their distinct insertions, and separation both above and below, readily point to very distinct petals. *Stamina* six, the length of the corol. *Anthers* linear, slightly recurvate, twice as long as their thicker

filament. *Germ* inferior, obliquely linear, three-celled with two vertical rows of *ovula* in each cell attached to the partition. *Style* rather longer than the stamina, straight and very stiff. *Stigma* clavate, perforated, three-lobed, lobes bidentate, and acute. *Capsule* inferior, linear, oblong, less convex on one side, and the separation marked by two opposite, longitudinal, sharp ridges; size of a small cucumber, smooth, dark brown, of a hard, tough fibrous texture, three-celled, three-valved, opening from the apex. *Seeds* many, reniform, in two rows, attached to the inner edge of the partition, each enveloped in its proper, beautiful azure-coloured axil (the robe of *Urania*.) *Perisperm* conform to the seed, white, friable. *Embryo* pointing immediately to the umbilicus of the seed, pure white ; varying its shape from that of a common flask to that of a retort.

BROMELIA. Schreb. gen. n. 540.

Calyx three-parted. *Petals* three, with a nectarial scale at the base of each. *Berry* superior, three-celled.

1. B. *ananas. Willd.* 2. 7.

Leaves ciliate with spinous points. *Spike* tufted.

Kapa-tsjakka. *Rheed. Mal.* 11. *t.* 1. *and* 2.

Beng. Ananas.

I do not know that it has been found indigenous in any part of India. Its not being a native of India is supported by the various vernacular names, evidently derived from *ananas*, as well as by their being no Sanscrit name for so remarkable a plant. A thing which could scarcely have happened if it had been a native of the East Indies. The general flowering time in India is about the beginning of the hot season.

There is a very beautiful striped-leaved variety of this species found at Malacca.

BURMANNIA. Schreb. gen. n. 542.

Calyx gibbous, mouth six-toothed ; the alternate one very small, (or they may be called petals.) *Corol* none. *Stamina* in pairs. *Capsule* inferior, three-celled. *Seeds* numerous.

1. B. *disticha. Willd.* 2. 16.

Leaves sword-shaped. *Spike* double.

Burmannia spica gemina. *Burm. zeyl. p.* 50. *t.* 20. *f.* 1.

It is a native of Ceylon.

Root of numerous capillary fibres, annual. *Leaves* radical, sword-shaped. *Scape* erect, from twelve to twenty inches high, round, pointed, with a sword-shaped sheath at each joint. *Spikes* double, spreading in opposite directions. *Bractes* lanceolate, one-flowered. *Flowers* erect, subsessile on the upper side of the spikes, pale blue. *Calyx* gibbous, one-leaved ; mouth six-parted, divisions alternate, larger permanent, and keeled on the back. *Corol* none, unless the three smaller divisions of the calyx be so called. *Filaments* none. *Anthers* three, joined to the sides of three large, ox-head-shaped glands, affixed to the calyx just below the smaller divisions thereof. *Germ* inferior, three-sided, three-winged, the wings a continuation of those of the calyx. *Style* erect. *Stigmas* three, large, emarginate. *Capsule* three-winged, three-cornered, three-celled, three-valved. *Seeds* numerous.

2. B. *triflora. R.*

Flowers about three in a terminal head. *Leaves* ensiform. Found by Mr. W. Roxburgh on Prince of Wales' Island. *Root* annual, consisting of a few small fibres. *Leaves*, few round the base, those of the scape ensiform, smooth. *Scape* filiform, erect, generally simple, invested in a few remote leaflike scales ; height about six inches. *Flowers* from two to four, terminal, short-pedicelled, large,

and beautiful. *Bractes* ensiform, one at the base of each pedicell. *Calyx* superior, subcylindric, amply three-winged, mouth six-toothed, the three alternate, (*Corol* of Linnæus,) very small, and ensiform. *Filaments* short in the mouth of the calyx. *Anthers* three-pair. *Germ* inferior. *Style* rather shorter than the calyx. *Stigma* three-cleft. *Segments* emarginate, adhering to the stamina. *Capsule* three-celled. *Seeds* numerous, minute, attached to the inner angle of the cells.

TRADESCANTIA. Schreb. gen. n. 543.

Calyx three-leaved, or three-parted. *Filaments* bearded, or naked. *Germ* three-celled. *Cells* few-seeded, attachment inferior. *Capsule* superior, three-celled, three-valved. *Seeds* few. *Embryo* in the back of the ample perisperm, centrifugal.

1. T. *axillaris. Willd.* 2. 20.

Annual, creeping. *Flowers* axillary. *Calyx* one-leaved. *Corol* one-petalled. *Filaments* bearded, and clubbed.

Nir pulla. *Rheed. Mal.* 10. *p.* 25. *t.* 13.

Hind. Baga nella.

Teling. Gola gandee.

Annual, a native of moist pasture ground, borders of rice fields, &c. appearing and flowering during the wet and cold season.

Root fibrous. *Stem*, there is in young plants an erect one, but in old ones it is depressed, and appears like one of the many long creeping branches that issue from its base, all are round, smooth, jointed and often coloured. *Leaves* alternate, sheathing, lanceolate, spreading, striated; *mouths* of the sheaths ciliate. *Flowers* axillary two or three, but in succession, so that there is never more than one expanded at a time, they are pretty large; colour a

deep, beautiful, blue purple. *Calyx* membranaceous, three-parted. *Corol* one-petalled, funnel-formed; *tube* cylindric, twice as long as the calyx. *Segments* three, cordate. *Filaments* six, the length of the corol, and inserted into its tube near the base; toward the apex swelled into an oblong pellucid body, and a little below surrounded with beautiful, jointed hairs. *Anthers* incumbent. *Germ* superior, three-sided. *Style* the length of the stamens, and near the apex swelled like the filaments.

Cattle are very fond of this plant.

2. T. *tuberosa. Corom. pl.* 2. *n.* 100.

Perennial, creeping; radical leaves ensiform, cauline, lanceolate, and downy. *Spikes* crested. *Corol* one petalled. *Filaments* bearded and clubbed.

A native of moist vallies.

Root tuberous, perennial. *Stems* several, creeping, round, jointed, from six to thirty inches long; there is a tuft of three or four, liliaceous, sword-shaped leaves, issuing immediately from the heads of the tuberous roots or rather their sheaths, forming a head from whence the roots and procumbent stems issue. *Leaves* of the stems linear-lanceolate, sheathing, striated, under side tinged with purple and downy. *Spikes* terminal, or from the interior axills, one or two together; peduncled, beautiful, imbricated as in *F. cristata*, with two rows of falcate, ciliate bractes. *Flowers* one in the axill of each bracte, small, blue purple. *Corol* one-petalled, &c. as in the last described. *Stamens* and *pistil* as in *T. axillaris.*

3. T. *paniculata. R.*

Annual, partly erect. *Leaves* lanceolate. *Panicles* terminal. *Corols* three-petalled. *Filaments* naked.

Teling. Kunda amadikada.

A native of moist vallies.

Root fibrous, annual. *Stems* creeping, with their ex-

tremities erect, jointed, smooth. *Leaves* lanceolate, sheathing. Mouth of the sheaths woolly. *Panicles* terminal, globular, many-flowered, hairy. *Flowers* small, blue. *Calyx* three-leaved, hairy. *Corol* three-petalled, the superior two, large, and ovate, the third lanceolate. *Filaments* simple, inserted round the germ, as long as the petals, without hairs or swelling.

4. T. *imbricata. Corom. pl.* 2. *N.* 108.

Creeping. *Leaves* lanceolate-cordate, stem-clasping and sheathing. *Spikes* secured, imbricated with two rows of bractes. *Corols* one-petalled, funnel-shaped.

Veetla caitu. *Rheed. Mal.* 7. *t.* 58.

Common on wet ground over most parts of India during the latter part of the wet season.

Root annual. *Stems* or *branches* creeping, jointed, round, pretty smooth, a small woolly ridge runs from joint to joint, being a continuation of the fissure of the base of the leaf next above; length from one to two feet. *Leaves* stem-clasping, sheathing, lanceolate-cordate, entire, somewhat fleshy, beautifully striated; margins woolly, otherwise smooth, from two to three inches long, and about one broad. *Spikes* terminal, solitary, sessile, recurved over the base of the last leaf, which may be called a common spathe, secund, imbricated with two pairs of lunulate, sessile bractes, each row generally consisting of from six to sixteen pair. *Flowers* sessile, one to each bracte, opening in succession, pale blue. *Calyx* three-parted, ciliate on the back and margins. *Corol* one-petalled, funnel-shaped; border of three equal divisions. *Filaments* inserted round the base of the germ, spirally twisted, and hairy. *Style* spirally twisted, naked. *Stigma* pitcher-shaped. *Seeds* two in each cell, pitted on the back.

Note. The corol being of one petal precludes the idea of its being *T. cristata.*

There is a variety with dark blue flowers.

PONTEDERIA. Schreb. gen. n 545.

Calyx, spathe common. *Corol* six-petalled or parted. *Stamina* and *style* ascending. *Capsule* superior, three-celled, three-valved.

1. P. *vaginalis. Willd.* 2. 23. *Corom. pl. n.* 110.

Leaves cordate, acute, from five to seven-nerved; *racemes* peduncled, after the flowers decay, recurved.

Carimgala. *Rheed. Mal.* 11 *t.* 44.

Sans. Neelotpala.

Beng. Nouka.

Teling. Nirocancha.

A native of the borders of sweet water lakes or marshy places. It flowers during the rains.

Root perennial, creeping. *Leaves* radical, narrow-cordate, pointed, entire, smooth, glossy; from two to four inches long, and from one to two broad. *Petioles* suberect, tapering, fistulous, smooth, from six to twelve inches long; those that bear a raceme are swelled a little about the middle, and there open like a spathe lengthways near the base, those that do not bear flowers are enlarged into a sheath, which embraces the exterior leaves. *Raceme* short-peduncled, after flowering time, drooping, from six to twelve flowered. *Pedicels* about three quarters of an inch long. *Flowers* blue and pretty. *Calyx* no other than the common spathe of the raceme. *Petals* six, the three exterior are the smallest, and oblong, the three interior obovate. *Filaments* ascending, inserted round the base of the germ, the lowermost one is generally broad, and two-cleft, its lower division bears a blue anther, the other nothing; the rest are yellow. *Germ* superior. *Style* single. *Stigma* gladular.

2. P. *hastata. Willd.* 2. 24. *Corom. pl.* 2. *N.* 111.

Leaves triangular, or hastate, pointed, many-nerved. *Racemes* subsessile, erect.

Teling. Neroo-Tamara.

A native of marshy places, or shallow standing sweet water. It flowers during the rainy and cold season.

Root perennial, thick, spongy, creeping when long, a little flexuose with many fibres issuing from every part. *Leaves* radical; those that bear the flowers a little more elevated, but differing in no other respect from the rest; broad-sagittate, or triangular, very entire, pointed, very smooth and glossy, from six to seven inches long, and from five to six inches broad, posterior angles generally obtuse. *Petioles* the flower-bearing longest and grooved a little, swelled near the apex, and there on the fore part, split like a sheath for the passage of the raceme; the other petioles are increased near the base into a large sheath, which embraces those within; they are tapering, sometimes spotted with small purple dots, from eighteen to twenty-four inches long, and not grooved like the flower-bearing petioles, or scapes. *Racemes* subsessile, erect, while they are in flower, while young, globular, but lengthening as the flowers expand. *Spathes* ovate. *Flowers* numerous, pedicelled, closely surrounding every part of the raceme; those nearest the apex begin to expand first, and continue in succession down; they are large, and of a beautiful bright blue, violet colour. *Pedicels* round, smooth, about an inch long. *Petals* six, withering, the three interior largest, and obovate; the three exterior oblong. *Filaments* six, short, the lower rather longer, and as in the last bifid or broad and undivided with a double anther. *Anthers* linear, erect, the lowermost one is much larger and blue, the rest are yellow. *Germ* superior, ovate, with three cells, each containing numerous ovula attached to a vertical thickened line, or a receptacle on each side of the partition. *Style* single, ascending, rather longer than the stamens. *Stigma* downy.

3. P. *Plantaginea. R.*

Diffuse. *Leaves* narrow, cordate. *Racemes* peduncled, three-flowered.

Plantaginis stellatæ foliæ. *Pluck. t.* 2215. *f.* 4. agrees much better with this, than with P. *vaginalis.*

A native of marshy, or watery places over Bengal. It flowers during the rains. *Stems* annual, and very trifling, but spreading on the ground for a few inches so that the radical fibres issue through the sheathes of the leaves and strike into the earth. *Leaves* petioled, narrow-cordate, entire, taper, obtuse-pointed, smooth; *lobes* semicircular; *nerves* about five, and faintly visible on the under-side only; the largest of the leaves is about two inches long and one broad. *Petioles* from three to four inches long, round, variously curved, with an opening about the middle on the inside for the raceme; from the mouth of the stem-clasping base, a very large tapering ligule, or bracte rises. *Racemes* peduncled, from two to four-flowered, and erect till they decay, then recurved. *Flowers* large for the size of the plant, short-pedicelled, bright, deep blue. *Calyx* the spathe of the raceme, inserted near its base. *Corol* one-petalled, to the base six-cleft; *divisions* lanceolate, the interior three narrower. *Filaments* five smaller, and one large, with a hornlet as in P. *vaginalis* and *hastata. Anthers* on the small filaments, small and roundish; on the large, sagittate, oblong. *Germ* oval, three-celled, each containing numerous *ovula* attached to septal receptacles not far removed from the axis. *Style* shorter than the stamina. *Capsule* oblong, three-celled, three-valved. *Seeds* numerous, round.

4. P. *dilatata. Syme's embasy to Ava.*

Leaves cordate-sagittate. *Umbel* peduncled, drooping; *flowers* numerous, long-pedicelled.

Hind. Cacheree.

A Native of Bengal, &c. It flowers during the rainy season.

5. P. *sagittata. R.*

Leaves sagittate; *umbel* sessile; *flowers* long-pedicelled.

A Native of low wet places near Chittagong.

PANCRATIUM. Schreb gen. n. 551.

Corol superior, infundibuliform, crowned with a campanulate, staminiferous nectary.

1. P. *zeylanicum. Willd.* 2. 41.

Leaves linear-lanceolate. *Spathe* one-flowered. *Segments* of the corol longer than the tube. *Stamens* incurved. *Nectary* twelve-toothed. *Lilium Indicum, Rumph. Amb.* 6 *t.* 70 *f.* 2. and a tolerably good figure, but *Cattuli Pola, Rheed Mal.* 11 *t.* 40 must certainly be excluded.

A native of the Molucca Islands and of Ceylon, from both places the roots have been received into this Garden, where they blossom about the beginning of the rains.

Root a round, smooth, truncated bulb, about an inch and a half in diameter. *Leaves* radical, bifarious as far as ten or twelve from the same bulb; slightly recurved, linear-lanceolate, pointed, smooth, from six to twelve inches long. *Scape* axillary, shorter than the leaves, a little compressed, smooth, supporting a single, large, pure white, faintly fragrant flower, which expands about sunset, and fades next morning. *Spathes* membranaceous. length of the tube of the corol. *Corol* superior; *tube* cylindric; *segments* of the border linear-revolute, longer than the tube. *Nectary* or crown of the corol spreading wide in the shape of a shallow bowl. The twelve divisions of its border acute. *Filaments* scarcely so long as the segments of the border of the corol, incurved.

2. P. *longiflorum. B. H.*

Leaves narrow lanceolate. *Spathe* one-flowered. *Segments* of the corol linear-lanceolate, half the length of

the tube. *Stamens* incurved, scarcely longer than the divisions of the gibbous campanulate twelve-toothed nectary.

A native of the Moluccas, from whence the roots were brought to the Botanic Garden at Calcutta in 1798. It is in blossom about the beginning of the rains.

Leaves radical, narrow-lanceolate, deep green, and smooth on both sides; length about twelve inches, and less than one in breadth.

Scapes much shorter than the leaves, and even shorter than the tube of the corol, compressed, one flowered.

Flowers large, pure white, fragrant. *Corol; tube* pale green, cylindric, a little furrowed, about six inches long. *Filaments* incurved, and very little longer than the divisions of the nectary. *Anthers* large.

3. P. *biflorum. R.*

Leaves linear-cuneate. *Spathe* from three to four-leaved, two or three flowered. *Corol* with a long, slender, three-sided tube and linear segments of the same length. *Sinuses* of the nectary erose. *Filaments* length of the nectary.

A native of India, but scarce. Flowering time in the Botanic Garden at Calcutta, the rainy season.

Leaves from four to eight, bifarious, erect, flat, linearly wedge-shaped, rather obtuse, smooth on both sides, slightly reticulated with transverse green veins; length about twelve inches, by one broad. *Scape* shorter than the leaves, erect, smooth, a little compressed, supporting two or three, large, pure white, faintly fragrant flowers. *Spathe* three or four-leaved, two-flowered; *leaflets* of various sizes and linear. *Corol; tube* pale whitish green, three-sided, slender, from three to four inches long, divisions of the border linear, first expanding, then recurved, about as long as the tube. *Nectary* broad funnel-shaped, scarcely one third the length of the laciniæ of the corol. *Sinuses* between the filaments erose. *Filaments* about as

long as the nectary, spreading. *Anthers* first yellow, afterwards brown. *Style* longer than the stamens. *Stigma* three-lobed.

4. P. *triflorum. R.*

Spathes three-flowered. *Leaves* linear acute ; *Segments* of the corol shorter than the tube ; fissures of the nectary alternately deeper, in which the incurvate stamens are inserted.

Beng. Sada-kanoor.

An elegant species, with large fragrant flowers.

Since writing the above, I have seen in the 2*nd. Vol. of the Linnæan Society's Transactions, Mr. Salisbury's* description of P. *verecundum,* which he thinks is P. *maritimum* of *Linnæus,* and from his acurate figures and description, find that my plant differs from his in the following respects.

1st. Here the leaves are more numerous, acute-pointed and not bifarious.

2nd. Here there are only from two to four flowers in the fascicle as also the ten divisions of the mouth of the nectary, are longer, waved, much more pointed than in his, and the filaments are at least two or three times longer than those divisions, whereas in his they are about the same length ; so that I conceive this must be another species.

CRINUM. Schreb. gen. n. 553.

Calyx ; Involucre spathaceous. *Corol* infundibuliform, six-parted. *Filaments* inserted on the mouth of the tube. *Germ* inferior three-celled ; *ovula* few ; attachment lateral. *Berry* inferior, somewhat fleshy, evalvular, containing two or three bulbiform seeds.

Sec. 1*st*. Flowers Regular.

1. C. *amoenum. R.*

Bulbs spherical. *Leaves* linearly tapering, smooth, margined, length of the inflorescence; *umbels* from four to six-flowered, regular, sessile.

An elegant small species; a native of Silhet where it is called *Gocinda* by the natives. It flowers in April and May, as well as now and then during the rains.

Bulbs small, and nearly round. *Stemless. Leaves* from six to twelve from each bulb, sparse, linear, toward the apex tapering, straight, more or less channelled, particularly toward the base; *margins* slightly scabrous; from one to two feet long and about an inch and a half broad. *Scape* from the axills of the old leaves, solitary, about a foot long, round, and smooth. *Umbels* from four to six-flowered with some filamentaceous bodies mixed amongst them. *Spathe* two leaved. *Flowers* large, white, sessile. *Tube* of the corol from three to four inches long, three-cornered; border of six equal, regularly disposed, linear-lanceolar, recurved segments, which are about as long as the tube; *apices* acute, and alternately uncinate. *Filaments* nearly as long as the border of the corol, ascending, red. *Anthers* linear. *Germ* inferior, sessile, oblong, polished, seemingly three-celled; *ovula* many, attached to the two margins of the three-receptacles, which are substantially attached to the walls of the *ovarium* and only meet in the centre; for on drying a transverse section, they separate spontaneously from the margins to the centre, and again each of the three has a fissure from the inner angle toward the insertion. *Style* above the tube, incurved, coloured like the filaments, and rather longer than they. *Stigma* three-lobed.

2. C. *asiaticum. Willd.* 2. 45.

Root an oblong bulb with a fusiform crown. *Stemless.*

Leaves sparse, rigidly linear, chanelled, obtuse, jointed; *margins* smooth. *Umbels* from ten to twelve flowered; *flowers* subsessile. *Style* as long as the stamens.

Beng. Sookh-dursun.

Belutta pola taly. *Rheed. Mal. Vol.* 11. *t.* 38.

This plant, which I now consider to be *Crinum asiaticum* of *Linnæus*, may have been the only asiatic species known to him when he wrote his *Flora Zeylanica*, grows on the moist muddy or swampy banks of rivers and is in blossom the greater part of the year, and is no doubt *Rumph.* second species of *Radixtoxicaria. Herb. Am.* 6. *p.* 156. which like ours delights in swampy banks of creeks, &c. where mud abounds.

Root bulbous with a terminal, stoloniferous, fusiform portion issuing from the crown of the bulb, descending deep into the mud or earth; from the last mentioned portion issue the ramous fibrous roots. *Stem* none. *Leaves* radical, equally disposed on every side, linear, concave, (so much so that a section forms nearly a perfect semicircle,) no keel; *margins* smooths; length from one to three feet, and where broadest little more than three-fourths of an inch. *Scapes* generally shorter than the longer leaves, a little compressed smooth, often coloured. *Umbels* with from six to sixteen flowers. *Spathe* two leaved, with filiform bractes amongst the flowers. *Flowers* large, white, subsessile, fragrant during the night. *Corol; tube* cylindric, from four to six inches long, coloured, or pale-green, according to exposure, smooth. *Divisions* of the border linear-lanceolate equally disposed; *margins* waved a little, a recurved process at the apex of each. *Filaments* equally disposed, ascending, upper half coloured. *Anthers* linear, incumbent. *Germ* beneath. *Style* as long as the stamina, declined. *Stigma* simple. *Berry* membranaceous, subglobose, containing in one cell, one or two rugose, bulb-like seeds and although the flowers are subsessile, the capsules are short-peduncled.

Note. I suspect that two or more, very distinct species have hitherto been included under one specific name; which I have now assigned to the above described, by far the smallest of the two, and no doubt Van Rheede's *Beluta pola tali.* The other, Rumphius's first species of *Radix Toxicaria*, which is the one he has figured, and now called by me *Crinum Toxicarium*, was, I believe, considered by König to be C. *latifolium* of Linn. and was formerly described and figured by me as such.

3. C. *ensifolium. R.*

Bulb ovate. *Leaves* sparse, straight, ensiform.

A native of Pegu from thence introduced by Dr. W. Carey into the Botanic Garden at Calcutta but has not yet blossomed there. In habit it most resembles *Asiaticum* but differs from that species in the shape of the bulb. The leaves also differ, for here they are less channelled, taper more toward the apex which is much shorter; other differences will, no doubt, be found when the flowers appear.

4. C. *brevifolium. R.*

Bulb stemless. *Leaves* rigid, straight, lanceolate, broad, obtuse-pointed, waved, margins smooth. *Umbels* from ten to twelve flowered; *flowers* regular, short-pedicelled. *Segments* of the border equalling the trigonal tube.

This elegant, rather small, very well marked species, has been introduced from the Mauritius into the Botanic Garden at Calcutta where it blossoms during the hot and rainy season.

Leaves six or eight from each bulb, sparse, straight, spreading a little, lanceolar, broad, obtuse, pointed, margins smooth, from twelve to eighteen inches long, and two and a half or three inches broad. *Scapes* from the axills of the old withered leaves, much compressed, about twelve inches high. *Involucre* two-leaved, from ten to twelve flowered. *Flowers* large, white and

faintly fragrant, short-pedicelled. *Tube* slender, about three inches long, trigonal. *Segments* of the border six, linear, recurved, length of the tube. *Filaments* equal, and equally disposed, shorter than the segments of the border. *Anthers* linear, incumbent. *Germ, style,* and *stigma* as in the other species.

5. C. *longifolium. R.*

Bulb spherical, stemless. *Leaves* linear, long, drooping, channelled, margins slightly scabrous. *Umbel* from ten to twelve flowered ; *flowers* subsessile.

A native of the interior parts of Bengal where it was found in single plants among grass, and on low inundated ground, by Dr. Carey, and by him introduced into the Botanic Garden at Calcutta, where it flowers and ripens its seed during the rainy season. It comes nearest C. *asiaticum,* but differs much in appearance, and in the size and shape of the bulb. This being a much better looking plant, the bulbous root has not the long spindle-shaped crown of that species, which penetrates deep into the mud on the borders of creeks, where that plant is naturally found.

Root many strong, fleshy fibres, from the crown of a round, tunicated bulb, which penetrate deep into the soil. *Leaves* many, equally disposed in all sides, declinate, tapering regularly from the base to a fine point ; general length from two to three feet, including their withered apices, concave, but no keel, margins cartilaginous, and hispid, striated, breadth about two inches at the base. *Scapes* axillary, length various ; in low inundated places, sufficiently long to raise the flowers above the water ; in the Botanic Garden, on dry ground, always much shorter than the leaves, variously bent, a little compressed, smooth. *Umbel,* with from eight to twelve sessile, large white, fragrant flowers, intermixed with filiform bractes. *Spathe* two-leaved. *Calyx* none. *Corol*

and *tube* subcylindric, inside rugose, about four inches long. *Segments* of the border linear-lanceolate, rather shorter than the tube. *Filaments* ascending, coloured, nearly as long as the segments of the corol. *Anthers* incumbent, brown. *Germ* oblong, three-celled, each containing many (from eight to sixteen) ovula attached, or rather immersed in the margin of their vertically oblong parietal receptacles. *Style* as long as the stamina, above the tube coloured. *Stigma* small, three-lobed. *Pericarpium (Berry)* subrotund, from one to two inches in diameter according to the number of seeds, swelled out where the seeds are lodged, crumbling away, or otherwise decaying. *Seeds* from one to eight or ten, shape and size varying according to the number.

6. C. *lorifolium. R.*

Bulb cylindrically-ovate. *Leaves* very long, thong-shaped, margins scarcely scabrous. *Umbels* with about twenty pedicelled regular flowers.

A native of Pegu, from thence introduced by the Rev. F. Carey, into the Botanic Garden at Calcutta where it flowers about the close of the rains. It has immenselylong, weak, recumbentleaves, the breadth of which at the base, the broadest part, is rather under two inches, and the length five feet. The bulbs thrive well, and produce abundance of suckers, by which it is very readily multiplied.

7. C. *Sumatranum. R.*

Stemless. Leaves linear-lanceolate, straight, stiff, channelled, margins hispid. *Umbel* from ten to twenty-flowered, flowers subsessile, regular.

A native of the interior parts of Sumatra, from thence Dr. Charles Campbell sent the plants to the Botanic Garden at Calcutta in 1801, where they thrive well, and blossom at different periods of the year.

Root perennial, ovate, with many thick, fleshy, fibres, descending from its crown. *Stem* none, at least scarcely any thing that can be so called has yet appeared after ten years culture. *Leaves* radical, straight, rigid, linear-lanceolate, rather obtusely pointed, concave on the upper surface; smooth on both sides, with their margins whitish, callous and hispid, held between the light and the eye, beautifully striated with double lines, and tessellated with transverse green veins, from three to six feet long, and from three to six inches broad. *Scapes* axillary, solitary, much shorter than the leaves, smooth, a little compressed. *Umbel* from ten to twenty-flowered. *Involucre* two-leaved, with filamentaceous fibres mixed amongst the pedicells. *Flowers* large, white, pedicelled. *Corol; tube* cylindric, about four inches long, divisions of the border linear, as long as the tube, having their apices alternately hooked. *Filaments* ascending, coloured, shorter than the segments of the corol. *Anthers* linear, incumbent. *Germ* inferior, subsessile, scarcely thicker than the tube of the corol, three-celled, in the inner angle of each is a fleshy succulent receptacle in which one, two, or three seeds are found immersed. *Style* shorter than the stamina. *Fruit* the size of a man's fist; cells uncertain, the partitions being obliterated, but the whole contains one, two, or three large, bulbiform seeds, covered with a tender, somewhat fleshy envelope, which does not open in any regular form, but soon decays.

8. C. *canaliculatum. R.*

Stemless. *Leaves* linearly tapering, smooth-margined, twice the length of the inflorescence. *Umbels*, from thirty to fifty-flowered; *flowers* pedicelled, regular. *Segments* of the border linear, channelled, obtuse, longer than the tube. *Leaves* from eight to fourteen, sparse, linear, tapering near the apex channelled, margins quite smooth; from three to five feet long, and from three to four

inches broad. *Scapes* from the exterior axills, solitary, about two feet long, surface smooth, inside flattened, about as thick as a man's thumb. *Umbels* composed of about forty middling-sized, pure white, long-pedicelled, sweetly fragrant flowers. *Tube* of the corol sub-semicylindric, two and a half inches long; *border* of six linear channelled, obtuse, alternately uncinate, recurved segments, which are larger than the tube. *Filaments* scarcely more than half the length of the segments of the border of the corol, ascending towards the point, coloured. *Anthers* linear. *Germ* elevated on pretty long, thick pedicells, and as in the other species, only apparently three-celled, the receptacles being in fact parietal, and only meeting in the centre; *ovula* several, in two vertical rows, attached to the double margin of the receptacle. *Style* above the mouth of the tube, three-cornered, and about as long as the filaments. *Stigma* of minute lobes.

9. C. *superbum*. *R.*

Caulescent. *Leaves* lanceolate, smooth, margined. *Umbel* of from twenty to thirty, pedicelled flowers; *tube* of the corol equalling the regular border.

A native of the interior forests of Sumatra from thence sent by Dr. Charles Campbell to the Botanic Garden at Calcutta where it thrives luxuriantly, and blossoms at various periods through the year. This is the largest and by far the most beautiful species of *Crinum* I have yet met with, and if the fragrance of its numerous large flowers is taken into the account, it is probably the most desirable of all the liliaceous tribe.

Root of many fleshy, ramous fibres from the rounded base of the stem, for there is scarcely any appearance of a bulb. *Stem* short, in six or seven year-old plants from twelve to eighteen inches high, as thick as a man's leg, or more, invested with the withered sheathes of the leaves, from its base and lower part shoots spring, in such abun-

dance as to render it readily multiplied. *Leaves* sparse, sheathing, lanceolate, straight and smooth, margins also smooth ; points blunt, deeply concave on the upper surface ; held between the eye and the light they are beautifully striated with numerous, simple, straight, longitudinal lines, and between these, tessellated with transverse, green veins; from three to six feet long, and from three to six inches broad about the middle, which is the broadest part. *Scape* from the stem immediately below the leaves about three or four feet long, much compressed, particularly on the inside, and about as thick as a man's thumb. *Umbel* from twenty to thirty-flowered. *Involucre* of two large, long, cordate, reflexed, coloured exterior leaves ; with numerous filaments mixed among the flowers. *Flowers* very large, pedicelled, rose-coloured, delightfully fragrant ; *tube* obscurely three-sided, about five or six inches long, deeply coloured ; *segments* of the border equally disposed, linear-lanceolate, revolute, as long as, or longer than the tube, deep rose colour on the outside, pale pink within, apices alternately uncinate. *Germ* inferior, oblong, three-celled, with a few *ovula* in each, attached to a fleshy receptacle, which appear to originate in the centre, from the axis, but their real insertion is into the walls of the *Germ*. *Style* declinate, the length of the deeply coloured, equally incurved, slender filaments. *Stigma* small, perforated, and obscurely three-lobed.

The ripe seed vessel has not yet been found ; they have continued abortive in Bengal.

9. *C. toxicarium. R.*

Caulescent. *Leaves* sparse, lanceolar. *Flowers* pedicelled, numerous, even as far as sixty in a hemispheric umbel. *Capsules* with one or more bulbiform seeds.

Crinum asiaticum. Bot. Mag. N. 1073, has the exact leaf of this species.

Radix toxicaria. *Rumph. Amb.* 6. *var.* 1*st. p.* 155. *t.* 69.

Beng. Bura-kanoor.

Cing. Tolabo.

I have only found it in gardens; where it is indigenous I cannot say, in Ceylon I believe. *Flowering* time the wet season, though more or less the whole year.

Stem short, but distinct, and stout. *Leaves* linear-lanceolar, very smooth; *margins* most entire; under side elegantly striated length-ways with deeper and lighter green; from three to four feet long, and from five to seven inches broad. *Scapes* axillary, shorter than the leaves, smooth, a little compressed, as thick as a man's thumb. *Flowers* numerous, often fifty, growing in a hemispherical umbel, white, almost inodorous. *Spathe* two-valved, with filiform bractes mixed among the flowers. *Stigma* small, entire, three-sided. *Berries* roundish, the size of a large pigeon's egg, smooth, crowned with the lower part of the remaining tube of the corol, seldom more than one-celled, without any natural opening, and containing one or more large, bulb-like, rugose, firm fleshy seeds; though in the germ there are the rudiments of three cells with many seeds in each.

Its immense large, beautiful, smooth, deep green leaves, make it conspicuous and desirable in the Flower Garden.

This plant has hitherto been blended with *Crinum asiaticum*, though no two species of liliaceous plants, of the same genus, can be more strongly marked, not only by the size, shape of the leaves, and number, &c. of the flowers in the umbel, but still more strongly by Toxicaria, being caulescent; and the other most perfectly destitute of every appearance of a stem. It ought to be compared with Willdenow's *Crinum bracteatum.*

10. C. *nervosum. Willd.* 2. 47.

Leaves reniform-cordate, many-nerved. *Spathes* many flowered.

Cepa sylvestris. *Rumph. Amb.* 6. *p.* 160. *t.* 70. *f.* 1.
Pancratium *amboinense*. *Willd.* 2. 45.

Introduced from Amboyna into the Company's Botanic Garden at Calcutta, where it blossoms in May and June, but rarely ripens its seeds.

Root bulbous, perennial. *Leaves* radical, petioled, reniform-cordate, many-nerved, entire, smooth on both sides; length and breadth nearly the same, and in healthy luxuriant plants about ten or twelve inches each way. *Petioles* smooth, deeply channelled. *Scape* erect. *Spathes* three, many (from thirty to fifty) flowered. *Flowers* pedicelled, large, pure white, and fragrant. *Bractes* chaffy, intermixed amongst the pedicells of the flowers. *Corol* infundibuliform. *Tube* slender, straight; divisions of the border shorter than the tube, alternately lanceolate and cuneiform. *Filaments* inserted by broad, lobate, sometimes united, fleshy bases, into the mouth of the tube of the corol, rather shorter than its divisions. *Anthers* incumbent. *Germ* beneath, three-celled, with two seeds in each, attached to the inner angle of the cell. *Style* rather longer than the stamens. *Stigma* simple, acute. *Berry* as in the other species but smaller, and with rarely more than one bulbiform seed.

Sect. I. *Flowers declinate.*

11. C. *augustum. R.*

Bulb columnar, mostly above ground. *Leaves* sparse, lanceolate, channelled, smooth-margined. *Scapes* lateral, the length of the leaves; *umbels* of from twenty to thirty, pedicelled, declinate flowers.

From the Mauritius this magnificent plant has been introduced into the Botanic Garden at Calcutta, where it blossoms at various times throughout the year, but with the greatest luxuriance during the rains; the scapes are as thick as a child's wrist, above three feet long, and of a dark, reddish purple colour, the umbels have then about

thirty sweetly fragrant, rosy flowers, on pedicells from one to two inches long; and coloured like the scape; *tube* of the corol from four to five inches long, colour a lighter purple; *segments* of the border lanceolar, six inches long; *filaments* and *style* purpie, declinate, with the incumbent *anthers* yellow. This is the only species known to me with any thing like a stem, and declinate flowers, nor can I reconcile it with any one of the many species of *Crinum* or *Amaryllis* hitherto described in any book that I have met with.

12. C. *latifolium. Sp. pl.* 419.

Bulb spherical, stemless. *Spathes* many, from ten to twenty-flowered. *Flowers* sessile, declinate, with an obliquely campanulate border. *Leaves* lanceolate, margins scabrous.

Amaryllis *latifolia. Willd.* 2. 57.

Sjovanna-pola-tali. *Rheed. Mal.* 11. *t.* 39.

Amaryllis ornata. *Bot. Mag. N.* 923, agrees so well with this as to induce me to think they are the same, or only varieties of one species.

A native of Bengal where it begins to blossom with the first showers in April, and continues to do so during the early part of the rainy season.

I long considered this most stately plant, a variety of C. *Zeylanicum*, but on taking up some of the bulbs of both sorts to send to England, I observed a greater difference in their appearance, than can be traced in the parts above ground, though even their disagreements are sufficiently conspicuous to justify the separation. The following description will be found more comparative than usual with me, on account of their resemblance and no doubt both belong to *Crinum*, at least to the same genus, with our East India Crina. I do not therefore think L. Heritier, and after him Willdenow,

have rendered Botany any service by changing the place of C. *Zeylanicum* and *latifolium.*

Root a spherical, tunicated bulb, often two feet in circumference and rather more flattened at the base, than on the opposite end. In C. *Zeylanicum* it is ovate, never so large and abounds more in cobweb-like fibres. *Leaves* numerous, radical, disposed equally on all sides, lanceolate, waved, smooth, tapering slowly from within a few inches of the base to rather a broad and obtuse point; *margins* scabrous, with minute, cartilaginous denticuli, length from one to three feet, and from three to five inches broad; in *Zeylanicum*, they are much narrower, the rib much more prominent, the length as much as three feet, the margins much more waved, and perfectly smooth; this mark alone is sufficient to distinguish the two plants. *Scapes* from the axills of the decayed leaves, somewhat compressed, as thick as a man's thumb and from twelve to twenty-four inches long; in *Zeylanicum* it is longer, and coloured. *Umbels* with from ten to twenty flowers; in *Zeylanicum* rarely so many; *spathes* (in both) two, of an ovate, conic form, with many soft *filaments* mixed amongst the flowers. *Flowers* sessile, large, tube green; *border* very pale rose, almost white, faintly fragrant, particularly when they first expand soon after sunset. In *Zeylanicum* they are scarcely so large, and the colours are much more bright, almost like Amaryllis vittata. *Corol; tube* declinate, cylindric, obscurely three-sided, about four inches long. *Border* campanulate, horizontal; *segments* lanceolar, with rather soft, subulate points; length between three and four inches. *Filaments* six, shorter than the *segments* of the border of the corol, inserted on the mouth of the tube, declinate, with apices sharp, and always erect. *Anthers* falcate, incumbent and tremulous, pale yellowish grey. In *Zeylanicum* they are brown. *Germ* inferior, oblong, three-celled, with several *ovula* in each, attached in two vertical rows, to the two lobes of the thick fleshy recep-

tacles, which are substantially united to the wall of the germ, and only *seemingly* so to each other in the *centre*. *C. Zeylanicum* and our other Indian *Crinums* have exactly the same germ, and all produce large bulbous seeds. *Style* filiform, declinate, projecting beyond the stamina. *Stigma* small, three-toothed. *Pericarpium; berry*, as in the plants quoted in the last paragraph, a soft somewhat fleshy perishable envelope which covers one, two, or three, rarely more large, fleshy, bulbiform seeds; no trace of either partitions or stutures to be found.

13. C. *zeylanicum. sp. pl.* 321. *Syst. veg. Murr.* 318, *&c.* *Bulbs* ovate, stemless. *Spathes* many, from ten to twelve flowered. *Flowers* sessile, declinate with a long recurved tube, and oblique, campanulate border. *Leaves* linear-lanceolate, keeled, much waved, drooping; *margins* smooth.

Beng. Sookh durshun.

Tulipa Javanica. *Rump. Amb.* 5. *t.* 105.

Amaryllis *lineata. Lamarck Encycl.* 1. 123.

A. *zeylanica. Willd.* 2. 56.

A. *ornata. Bot. Mag.* 1171.

Grows wild on low, rich, uncultivated ground, and generally on the banks of rivers and water courses. Flowers first in May, and continues doing so during the rainy season.

Spathes two-leaved with linear membranaceous bractes amongst the flowers. *Corol; tube* very long, recurved. *Berries* and seeds exactly as in the other species.

Note. When the plant is suffered to remain some years in the same place, it multiplies so much, as to throw the bulbs nearly even with the surface of the earth, and then they appear to have stems, which are formed by the concentric sheathes of the leaves, as in the more perfect caulescent species.

Crinum giganteum, Andrew's Bot. Rep. 169, has lately

been introduced from the Mauritius, into the Botanic Garden at Calcutta, where it grows luxuriantly, and blossoms with the other species, in May, and during the rains. It has almost the exact flowers of my C. *latifolium*, with nearly the leaves of this species, only rather longer, and narrower, margins more waved as in *Amaryllis spectabilis, N.* 390. of the same work, curled, and *scabrous*; in *Zeylanicum* they are smooth.

14. C. *moluccanum. R.*

Bulbs spherical; stemless. *Spathes* from four to six-flowered; *flowers* sessile, declinate; tube recurved, equalling the lanceolar segments of the border. *Leaves* linear-lanceolate, waved, reclinate; *margins* scabrous.

This most elegant, rather small species, was introduced from Amboyna, into the Botanic Garden at Calcutta in 1798, where it blossoms during the rainy season, generally in July and August.

AMARYLLIS. Schreb. gen. n. 554.

Corol hexapetala, irregular. *Filaments* from the mouth of the tube, declinate, unequal in proportion, or direction.

1. A. *radiata. Willd.* 2. 60.

Spathe two-parted, many-flowered. *Flowers* pedicelled; *tube* short; divisions of the border unilateral, linear, waved, revolute. *Stamina* and *style* ascending, longer than the corol.

Chin. Yuk-lan.

A native of China, blossoming during the rainy season in the Botanic Garden at Calcutta.

2. A. *aurea. Willd.* 2. 57. *Bot. Mag.* 409.

Spathe from six to eight flowered; *flowers* short-pedi-

celled, declinate ; *segments* of the border linear, revolute, and waved. *Leaves* linear.

A native of China ; from thence introduced into the Botanic Garden at Calcutta, where it blossoms about the close of the rainy season.

ALLIUM. Schreb. gen. n. 557.

Spathe many-flowered. *Umbels* collected. *Corol* six-petalled, expanding. *Capsules* superior, three-celled.

1. *tuberosum. R.*

Root tuberous. *Scape* naked, nearly round, having only a ridge on one side. *Leaves* linear, flat. *Umbels* fastigiate ; capsule-bearing.

Beng. Bunga-gundeena.

This plant I find cultivated about Calcutta by the Hindoos, yet I cannot well reconcile it with any species hitherto described. It grows in large tufts, like *A. schoenoprasum*, or cives.

Root tuberous, perennial, with numerous long, white, fleshy fibres. *Leaves* radical, united for an inch or two, by means of their sheathes, into something like a short stem, above the sheathes they are linear, somewhat twisted, a little concave on the upper side, and convex underneath, smooth, about half the length of the scapes. *Scapes* naked, rising amongst the leaves, suberect, round, with a pretty sharp ridge on one side, tapering from the base. *Umbel* fastigiate, crowded. *Spathe* single, membranaceous, withering. *Petals* oblong, acute. *Stamens* equal, simple, shorter than the petals.

The Hindoos use it as an article of diet as leeks are used in Europe, and other countries.

2. A. *Porrum. Willd.* 2. 64.

Stem flat-leaved. *Umbel* bearing. *Stamens* three-pointed. *Root* coated.

Beng. Gundeena.
Pers. Gundana.
Arab. Koomass.

3. A. *sativum. Willd.* 2. 68.

Stem flat-leaved. *Umbel* bulbiferous. *Bulb* compound. *Stamens* three-pointed.

Sans. Lusoona, Mahoushudha, &c.
Beng. Lusoon, but generally pronounced Rusoon.
Pers. Seer.

4. A. *cepa. Willd.* 2. 80.

Scape naked, gibbous near the base, longer than the columnar leaves.

Arab. Besel, or Bassul.

5. A. *ascalonicum. Willd.* 2. 75.

Biennial. *Scape* naked, round, a little swelled below, and longer than the sub-columnar leaves. *Umbels* round, many-flowered. *Stamens* alternately swelled at the base. *Petals* equal, expanding, shorter than the stamens.

Beng. Peeaj.
Sans. Pulandoo.

This very useful *onion*, is much cultivated in India during the latter part of the rains, and the cool, dry months of October, November, December, January, and February, by planting the smaller bulbs, and offsets, or by the seed. The dry roots are universally sold in every market over India, and form a very considerable part of the diet of the natives. The general price in Calcutta is about two shillings the hundred weight.

Root biennial, or more, consisting of a fascicle of several ovate oblong bulbs, generally (as found in the markets,) about as large as the first joint of the middle finger. *Leaves* somewhat bifarious, fistulous, more than semicylindrical, tapering, pointed, compressed toward the apex, smooth

and shorter than the scapes. *Scapes* rising from the centre of the short stem formed by the united sheathes of the leaves, naked, round, smooth, slightly swelled towards the base and from thence tapering to the umbel, from one to two feet long. *Sheathes* shorter than the umbel, irregularly bursting into two or three subovate segments. *Umbels* globular, as much as two hundred-flowered. *Flowers* like those of the common onion, (*Cepa.*) *Petals* equal, expanding, shorter than the stamens, white, with a green keel. *Filaments* erect, alternately dilated at the base. *Anthers* ovate, green.

GLORIOSA. Schreb. gen. n. 561.

Calyx none. *Corol* six-petalled reflex. *Germ* superior, three-celled. *Cells* many-seeded, *attachment* central. *Style* oblique. *Capsule* three-celled, three-valved. *Seeds* several. *Embryo* double, furnished with a perisperm.

1. G. *superba. Willd.* 2. 95.

Root bulbous, biennial. *Stem* herbaceous. *Leaves* lanceolate, ending in a tendril.

Mendoni. *Rheed. Mal.* 7. *t.* 57.

Hind. Cariari. Kärhïäné

Beng. Ulat-chandal. Eesha langula.

Native of forests of India; it appears during the rainy season in Bengal, and is one of the most ornamental plants any country can boast of; the root is said to be a violent poison.

CURCULIGO. Gort.

Calyx none. *Corol* superior, pedicelled or sessile; border six-parted. *Germ* three-celled, *Cells* many-seeded; *attachment* central. *Capsule* veined, one-three-celled.

Seeds few. *Embryo* cylindrical, radicle centripetal; *perisperm* ample.

1. C. *orchioides*, *Gœrt. Sem.* 1. 63. *Willd.* 2. 105. *Corom. pl.* 1. *n.* 13.

Polygamous. *Leaves* linear-lanceolar, plaited; *apices* viviparous. *Corol* long-pedicelled.

Nela pana kelangu. *Rheed. Mal.* 12. *t.* 59. *good.* Orchis amboinica major. *Rumph. Amb.* 6. *t.* 54. *f.* 1.

Teling. Nanla, Tadee.

A native of shady, uncultivated places about Samulcota, though by no means common; in my garden it flowers all the year round.

Root perennial, tuberous, with many fleshy, vermicular, fibres spreading in all directions. *Stem* none. *Leaves* numerous, radical, petioled, narrow-lanceolar, nerved, slender, when young there are a very few soft white hairs on them; from six to eighteen inches long, and from half an inch to an inch broad, their apices are viviparous, whenever they rest on the ground for any length of time. *Petiols* channelled, below sheathing, so as to embrace those within. *Racemes* solitary, axillary, two-ranked, with their apices just appearing above the earth. *Pedunc-les* compressed, clavate, about an inch long. *Bractes* one-flowered, below remote, above nearer, spathiform pointed, decreasing in length towards the top, so that the apices of the whole are nearly horizontal, (corymbiform). *Flowers* pretty large, yellow, the one or two lowermost are HERMAPHRODITE, above, all are male.

HERMAPHRODITE. *Calyx* none. *Corol* one-petalled, the border elevated above the soil on a long, slender, villous imperforated pedicel; *segments* of the border six, lanceolate, spreading, hairy on the outside. *Filaments* six, very short, inserted on the base of the segments of the border of the corol. *Anthers* linear, erect. *Germ* inferior, sessile, lanceolate, three-celled, with several ovula in each,

attached to the axis. *Style* very short. *Stigma* large, tapering, apex more or less three-cleft. *Capsule*, when a germ, it shows three-cells, with the rudiments of six or eight seeds in each, but when the seeds are ripe, the number is only from one to four in the whole, and they seem as if in a transparent, fleshy, one-celled capsule, separated by a spongy substance. *Seeds* from one to four, shining black, beaked. *Male peduncle*, *corol*, and *stamens* as in the hermaphrodite ; no *germ*, *style*, or *stigma*.

Note. It is a plant of no great beauty, nor are its flowers fragrant ; variety alone must recommend it to a place in the Flower Garden.

2. C. *recurvata. R.*

Leaves lanceolar, plaited. *Raceme* globular, recurved. *Corol* sessile, rotate. *Capsule* bacciform, round, many-seeded.

It is a native of the eastern frontier of Bengal, from thence received into the Botanic Garden at Calcutta, where it blossoms, and ripens its seed the whole year round.

Root perennial, consisting of many fleshy fibres proceeding from a tuberous, stoloniferous body. *Stem* none. *Leaves* radical, petioled, lanceolar, recurved, plaited, entire, smooth on both sides, from one to three feet long, and from two to six inches broad. *Petioles* deeply channelled, one-third, or one-fourth the length of the leaves. *Scapes* axillary, about as long as the petioles, compressed, villous, apex recurved. *Racemes* solitary, strobiliform drooping. *Bractes* spathiform, solitary, singly one-flowered, villous, tapering, about as long as the pedicells and flowers taken together. *Flowers* hermaphrodite, yellow, expanding three quarters of an inch. *Calyx* none. *Corol* superior, sessile, rotate, six-parted. *Segments* lanceolate, spreading, villous on the outside, smooth and yellow, on the inner persistent. *Filament* short, inserted on the

short tube of the corol. *Anthers* linear, erect, adhering to each other as in the syngenesious tribe. *Germ* obovate, hairy, three-celled, with many ovula in each, attached to the axis. *Style* longer than the stamens. *Stigma* dilated, subtrilobate. *Capsule* berried, inferior, ovate, the size of a large pea, soft, and clothed with hairs, not opening, three-celled with several seeds in each, arranged in two or three vertical rows, and attached to the axis. *Seeds* round, the size of a small grain of black pepper, and like it black, and wrinkled. *Integuments* two; exterior hard, thick, red, and brittle; inner, a brown membranaceous crust. *Perisperm* conform to the seed, cartilaginous, pale blue. *Embryo* simple, cylindric, straight, penetrating from the umbilicus more than half through the perisperm, (centripetal.)

3. C. *sumatrana. R.*

Leaves broad-lanceolar, plaited. *Spike* half hid in the earth. *Corol* pedicelled. *Stigma* three-lobed.

Involucrum. *Rumph. Amb.* 6. 114. *t.* 53.

A native of the mountains of Sumatra, and from thence sent by Dr. Campbell to this Garden in 1800, where it blossoms in March and April.

Root stoloniferous, perennial. *Stem* none. *Leaves* radical, few, petioled, lanceolar, recurved, plaited, above smooth, somewhat woody underneath, entire, about nine inches long, and about three broad. *Petioles* deeply channelled, from three to four inches long, smooth. *Spikes* strobiliform, mostly hid in the earth, the points of the bractes, and flowers only are visible. *Bractes* ovate-lanceolate, hairy, one-flowered, shorter than the pedicels of the corols. *Flowers* yellow, the lower *hermaphrodite*, while those that occupy the crown of the spike, and of course expand last, are generally *male*. *Calyx* none. *Corol* flat, elevated above the germ, on an erect, hairy columnar pedicel; *segments* six, lanceolate, united at the

base, withering. *Filaments* six, short, inserted on the united segments of the corol. *Anthers* erect. *Germ* flask-shaped, villous, three-celled, with many ovula in each, attached to the axis. *Style* crooked, shorter than the petals. *Stigma* enlarged with three small lobes.

SCILLA. Schreb. gen. n. 567.

Calyx none. *Corol* six-petalled, spreading, deciduous. *Filaments* filiform.

1. S. *indica. R.*

Bulb tunicated. *Leaves* narrow and taper from the base. *Racemes* simple, longer than the leaves. *Flowers* remote, solitary, long-pedicelled, drooping.

A native of the sandy shores of various parts of India. Flowering time the month of March and April.

Root a round, white, perennial, tunicated bulb, about the size of a large apple. *Leaves* numerous, radical, subbifarious, ensiform, nearly flat, smooth on both sides, from six to eighteen inches long. When in blossom the plant is perfectly destitute of leaves. *Scape* erect, round, smooth, naked; including the raceme from two to three feet long. *Raceme* very long, erect. *Flowers* remote, long-pedicelled, drooping.

The taste of the root is fully as nauseous, and bitter as that of *Scilla maritima,* and may be possessed of the same qualities.

2. S. *coromandeliana. R.*

Leaves linear, rather acute, deeply channelled. *Racemes* erect, longer than the leaves, bearing from four to eight, remote, long-pedicelled, drooping flowers. Inner petals straight, and bearded at top.

A native of the sand hills of the Coast of Coromandel. In the Botanic Garden at Calcutta it blossoms in May,

at which period the plant is perfectly destitute of leaves, nothing but the straight very slender scape, and raceme is to be seen.

Root a round, tunicated, perennial, greenish-white bulb, of about an inch and a half in diameter. In taste it is exceedingly nauseous, and bitter, and is in India sometimes used as a substitute for the officinal squill. *Scilla maritima.* *Leaves* linear, rather acute, smooth, deeply channeled; generally six or eight inches long, and less than half an inch broad, even when spread flat. *Scape* straight, erect, naked, smooth, and slender; whole height, raceme included, from twelve to eighteen inches; and not thicker than a crow quill. *Flowers* from four to eight, remote, long-pedicelled, drooping, colour a mixture of dull green, and still duller white, with a slight purple tinge. *Bractes* small, caducous. *Petal* oblong, and nearly of the same size, the inner three with bearded apices. *Filaments* six, equal, inserted on the base of the petals, clavate. *Germ* ovate-oblong. *Style* a three-sided, inverted cone, with a triangular opening at top, for the *stigma.*

ASPHODELUS. Schreb. gen. n. 569.

Corol six-parted. *Nectary* six-valves covering the genitals.

1. A. *clavatus. R.*

Annual. *Stem* naked, ramous. *Leaves* erect, straight, cylindric, fistulous. *Filaments* clavate above their nectarial ciliate base.

A native of the interior parts of Bengal, where it appears to blossom, and ripen its seed during the cold season.

It seems, from the descriptions and figures in my possession of A. *fistulosus* to be very nearly allied to it. In

this the leaves are perfectly straight, and upright, tapering to a long fine point, and as completely fistulous as in the *Onion*. The filaments are nearly of equal lengths, and as much contracted immediately above their expanded ciliate base, and swell much toward the apex. The *petals* are white, with a brown line along the centre.

ANTHERICUM. Schreb. gen. n. 570.

Calyx none. *Corol* beneath, six-petalled, expanding. *Capsule* ovate.

1. A. *uniflorum. R.*

Bulb ovate. *Scape* simple, straight, one-flowered. *Leaves* linear, channelled; *stamina* smooth. *Style* scarcely any. *Stigma* three-cleft.

A native of Rohilkhund, from thence introduced into the Botanic Garden at Calcutta, by Mr. A. Gott, where it blossoms during the cold season.

Bulb ovate, from its base spring many fleshy fibres, some of which support a pendulous oval tuber. *Leaves* two, from the crown of the bulb, and generally two, remote from each other, on the lower half of the scape; all are linear, channelled, equalling in height the scape itself. *Scape* erect, round, smooth, about a foot high, supporting on its apex one, large, pure white flower. *Petals* broad-lanceolate, spreading. *Filaments* short, broad, and smooth. *Anthers* linear, erect. *Germ* oblong, obtusely three-sided. *Style* scarcely any. *Stigma* three-cleft; *lobes* recurved.

2. A. *tuberosum. R.*

Root tuberous. *Leaves* radical, waved. *Scape* ending in an oblong panicle. All the *stamens* subulate.

Sans. Chitra, also Vrishna.

Teling. Kushellee.

A native of the moist vallies up amongst the Circar mountains. Flowering time the rainy season.

Root perennial, consisting of many, fleshy, round fibres ending in small, oblong tubers. *Leaves* radical, many, ensiform, margins waved, smooth, from one to two feet long ; and from two to four inches broad.. *Scapes* round, smooth, naked, from one to three feet long. *Panicles* oblong, erect. *Flowers* numerous, sub-erect, pure white, about the size and appearance of the snow-drop. *Filaments* equal, simple, short, ascending. *Anthers* linear, erect. *Style* ascending, projecting rather beyond the anthers. *Stigma* lobed. *Capsule* three-sided.

I have had many of the plants in my garden for several years ; they are very beautiful when in blossom, and have a long succession of flowers.

ASPARAGUS. Schreb. gen. n. 573.

Calyx none. *Corol* beneath, six-petalled. *Germ* superior, three-celled ; *cells* few-seeded ; *attachment* interior. *Berry* three-celled, one or two-seeded. *Embryo* serpentine, transverse, on the exterior side of an ample perisperm, opposite to the umbilicus.

1. A. *officinalis. Willd.* 2. 150.

Stems herbaceous, columnar, erect. *Leaves* bristly. *Stipules* in pairs.

Pers. and *Hind.* Nak-doun.

Beng. Hilyoon.

Arab. Hulyoon.

Found as in Europe, in a cultivated state only.

2. A. *acerosus. R.*

Herbaceous, erect. *Thorns* solitary, recurved. *Leaves* three-fold, three-sided, acute, polished, permanent. *Racemes* lateral.

A native of the interior parts of Bengal. Flowering

time the close of the rains, and the beginning of the cold season; seed ripe in December.

Root perennial, composed of many, fusiform, succulent tubers. *Stems* erect, flexuous, round. *Branches* numerous, alternate, expanding, when old round, while young angular. *Bark* smooth, and green on the young parts; on the old, a little ferruginous. *Thorns* solitary, under the branches; *branchlets* and leaves, recurved, strong,and sharp. *Leaves* three-fold, acerose, three-sided, polished, acute. *Stipules* solitary; between the three leaves, branch, or branchlet and thorn triangular, scariose, permanent. *Racemes* lateral, generally solitary, simple, and short. *Flowers* pure white, delightfully fragrant. *Petals* equal, at first expanding, afterwards recurvate. *Filaments* five, incurved, inserted on the petals considerably above their insertion, and shorter than them. *Germ* three-lobed. *Style* short. *Stigma* three-cleft, with lobes recurved. *Berry* nearly round, about the size of a pea, rarely more than one of the lobes of the germ comes to maturity, and in that case it is enlarged a little on one side, with the two abortive lobes, smooth, when ripe red, one-celled. *Seed* single, spherical, attached to the axis, which is now on one side by the abortion of two of the lobes of the germ. *Integument*, a single lucid, somewhat dotted, black crust, adhering firmly to the perisperm. *Perisperm* conform to the seed, horny, greenish-white. *Embryo* slender, equally thick on every part, white, arched in a large semicircle round the circumference of the seed most remote from the umbilicus.

A charming shrub, and easily distinguished by its acerose three-fold, three-sided, polished, acute, permanent leaves.

3. A. *racemosus. Ed. sp. Willd.* 2. 152.

Shrubby, scandent. *Thorns* solitary, recurved. *Leaves*

fascicled, incurved, channelled on the back. *Racemes* thorn-axillary over the ligneous branchlets.

Sans. *Suta*-moolee.

Hind. Sada-bori.

Beng. Sut-mooli.

A native of various parts of India. Flowering time the cold season, when it perfumes the air to a considerable distance with the delightful fragrance of its flowers; seeds ripe in March.

Root consisting of many, fusiform, smooth, perennial tubers. *Stems* scandent, slender, woody smooth; *young shoots* striated. *Thorns* solitary, recurved, short, strong and sharp. *Leaves* fascicled, filiform, incurved, three-sided. *Racemes* generally simple, often crowded together in the axills of the thorns, over the slender woody branchlets. *Bractes* cordate, and scariose, several about the base of the raceme, they are one-flowered. *Pedicells* diverging, jointed at the middle, one-flowered. *Flowers* very numerous, small, pure white. *Petals* oblong, reflexed. *Filaments* incurved, rather shorter than the petals. *Anthers* purple. *Germ* superior, three-lobed, three-celled, each containing about four ovula, attached to the axis. *Style* short. *Stigma* three-cleft. *Berry* three-lobed, two are generally small, and abortive; when ripe red, and covered with a small portion of pulp. *Seeds* solitary, black. *Embryo* transverse, and curved in a serpentine manner in the back of an ample, hard perisperm, nearly opposite to the umbilicus.

4. A. *curillus. Buch.*

Herbaceous, leaning. *Thorns* solitary, recurved. *Leaves* tern, three-sided, acute, incurved. *Racemes* lateral, few-flowered. *Flowers* long-pedicelled. *Petals* cuneiform, expanding.

A native of Nepal, from whence Dr. Buchanan sent seeds thereof to the Botanic Garden at Calcutta, where it

about two years, the plants blossomed in July for the first time, and continue so to do, and to ripen their seeds in January.

Root perennial. *Stems* weak, diffuse, leaning much, or scandent in a favorable soil and supported; flexuose, round and smooth, very ramous. *Branches* expanding, angular. *Thorns* solitary, recurved, acute. *Leaves* tern, three-sided, incurvate, acute, smooth, tapering toward both sides. *Racemes* lateral, and generally one on each side of a small branchlet, short, bearing a few, remote, long-pedicelled, small white flowers. *Pedicels* jointed, swelled, and bracted at the middle. *Bractes* tapering, membranaceous, two at the base of each pedicel, and one at or near the middle. *Filaments* inserted on the petals above the base, incurved. *Germ* turbinate. *Style*, short. *Stigma* of three, recurved lobes. *Berry*, size of a pea, three-lobed, when ripe red.

5. A. *adscendens. R.*

Herbaceous, erect. *Thorns* solitary, straight. *Leaves* fascicled, cylindric, straight. *Racemes* lateral, simple or compound. *Berries* pendulous.

This very elegant species, is a native of Rohilkhund; from thence Mr. A. Gott sent seeds to the Botanic Garden at Calcutta in 1804; and in November 1807, the plants began to blossom, and ripened their seeds in February.

Root perennial. *Stems* round, and slender, yet in general nearly straight and erect. *Bark* smooth, ash-coloured. *Branches* round, diverging, with their extremities ascending. *Thorns* solitary, straight, slender, and acute. *Leaves* numerous, fascicled, cylindric, filiform, smooth, permanent. *Racemes* lateral, at the insertions of the branches and branchlets, solitary, or one on each side, the former, often compound. *Flowers* small, pure white, supported on diverging, slender, jointed pedicells.

Petals six, distinct at the base, oblong, first expanding, afterwards reflexed. *Germ* turbinate, three-lobed, three-celled, with about six seeds in each, in two vertical rows. *Style* three-grooved. *Stigma* three-cleft. *Berry* pendulous, size of a pea, three-lobed; and as I have constantly remarked that two of the lobes are abortive, its shape is obliquely obovate, smooth, when ripe red, and succulent. *Seed* single, round, attached to the axis, which is now much to one side, by the abortion of two of the lobes of the germ. *Integument* single, lucid, black. *Perisperm* conform to the seed, pure white, cartilaginous. *Embryo* serpentine, lateral.

FLAGELLARIA. Schreb. gen. n. 614.

Calyx three-leaved. *Corol* three-petalled. *Germ* superior, three-celled. *Cells* one-seeded, attachment superior. *Berry* superior, one-seeded. *Embryo* in the base of the perisperm.

F. *indica. Willd.* 2. 263.

Teling. Poindee-pootee.

Beng. Bun-chunda.

Hind. Harcharrul.

Panambu-valli. *Rheed. Mal.* 7. *t.* 53.

Sirioides. *Rumph. Amb.* 5. *t.* 29. *f.* 1.

A long, straggling, scandent, perennial plant; a native of forests. Flowers during the beginning of the rains in June.

Calyx three-leaved; *leaflets* unequal, one or two being broader, and emarginate. *Petals* three, oblong, alternate with the leaflets of the calyx, and of nearly the same size. *Anthers* linear, cleft at each end. *Germ* superior, three-celled, one ovula in each, attached to the top of the axis. *Styles* three, shorter than the stamens. *Stigma* simple. *Berry* globular, size of a large pea,

smooth, red, pulpy, generally one-seeded, though there is always the rudiments of three.

DRACÆNA. Shreb. gen. n. 574.

Calyx none. *Corol* six-parted, erect. *Filaments* somewhat thicker in the middle. *Germ* superior, three-celled, cells one-seeded ; attachment interior. *Berry* three-lobed, with one seed in each (generally one or two of the lobes abortive.) *Embryo* near the base of the perisperm on the outside.

1. D. *angustifolia. R.*

Shrubby. *Leaves* stem-clasping, linear, acute, drooping, waved, smooth. *Panicle* terminal, *flowers* fascicled.

Terminalis angustifolia. *Rumph. Amb.* 4. *t.* 35.

A native of Amboyna, and from thence introduced into the Botanic Garden at Calcutta in 1798. Flowering time in Bengal, the hot season ; seed ripe in September and October.

Root ramous. *Stem* erect, as thick as a stout walking cane ; ramous, marked with the oblique cicatrices of the fallen leaves ; whole height, when in blossom, eight or ten feet. *Leaves* crowded about the top of the plant, stem-clasping, linear, acute, drooping ; *margins* waved, entire, smooth on both sides ; from twelve to eighteen inches long, and under two in breadth. *Panicles* terminal, ovate, composed of many somewhat ascending, compound branches. *Flowers* numerous, fascicled, pedicelled, greenish white. *Bractes* small, from one to four-flowered. *Calyx* none. *Corol* one-petalled, permanent, subcylindric, half six-parted, *divisions* linear, on the day of expansion revolute. *Filaments* six, rather shorter than the corol, inserted on the middle of the base of its divisions. *Anthers* incumbent. *Germ* superior, three-sided.

Style length of the corol. *Stigma* three-lobed. *Berry* from one to three-lobed, pulpy, deep orange colour, each lobe the size of a marrow-fat pea, containing one, large, round, horny seed.

2. D. *ferrea. Willd.* 2. *p.* 157.

Perennial, caulescent, erect. *Leaves* petioled, lanceolate, cuspidate, ferruginous. *Petioles* stem-clasping, and channelled. *Panicle* terminal.

Terminalis rubra. *Rumph. Amb.* 4. *p.* 80. *t.* 34. *f.* 2.

A native of China. In Bengal it blossoms from December until March, but never produces seed.

Stem erect, often as thick as a man's wrist, with few, erect, perennial, round branches marked with the cicatrices of the fallen leaves, height of the plants in Bengal, when eight or ten years old, from six to ten feet. *Leaves* sub-bifarious, petioled, lanceolate, cuspidate, entire, smooth on both sides; while young a lively pink, changing to a deep ferruginous colour, particularly on the upper surface; from one to two feet long. *Petioles* stem-clasping, deeply channelled, from three to six inches long. *Panicle* terminal, composed of several, generally simple, diverging racemes. *Bractes* three-fold, triangular, acute. *Flowers* numerous, short-pedicelled, diverging, pale purple. *Calyx* none. *Corol* one-petalled. *Tube* short, and somewhat gibbous. *Border* of six, oblong, spreading segments; the exterior three deeper coloured. *Filaments* rather shorter than the segments of the corol, and inserted on their base, at the mouth of the tube. *Germ* three-celled, in each many *ovula* in two vertical rows, attached to the axis. *Style* as long as the stamens. *Stigma* three-cleft.

Note. In Bengal this has not ripened its fruit.

3. D. *terminalis. Willd.* 2. 157.

Perennial, caulescent, erect. *Leaves* lanceolate.

Terminalis alba. *Rumph. Amb.* 4. *p.* 80. *t.* 34. *f.* 1.

A native of the Moluccas. Flowers about the beginning of the hot season in the Botanic Garden at Calcutta.

4. D. *spicata. R.*

Caulescent. *Leaves* lanceolate, drooping. *Spikes* terminal, *bractes* many-flowered. *Corol* cylindric, at last becoming twisted. *Stigmà* three-lobed.

A native of Chittagong, and from thence introduced into this Garden by Dr. Buchanan, where it blossoms in April.

Root fibrous. *Stem* erect, toward the top succulent, perennial, marked with the cicatrices of the fallen leaves, as in the other *Dracæna*. *Leaves* crowded about the extremity of the plant, sheathing, lanceolate, drooping, entire, pointed; smooth on both sides; from six to twelve inches long, and two or three broad. *Spikes* terminal, bent a little to one side; numerous pointed, recurved bractes surround the base, and a few shorter, appressed ones from thence to the flower-bearing position. *Flowers* numerous, sessile, collected in small fascicles, each fascicle having a small, cordate, pointed bracte immediately under it. *Calyx* none. *Corol* one-petalled, cylindric, divided half way down into three exterior, and three interior slender, linear, equal, straight segments; colour pale greenish yellow, as they advance in age the tube becomes twisted. *Filaments* inserted on the base of the segments of the corol, and of their length. *Stigma* three-lobed. *Berry* with from one to three, distinct, round, and smooth lobes; while immature, a deep olive green, when ripe, deep reddish orange; each lobe containing a single, large, round, smooth, white, horny seed.

5. D. *maculata. R.*

Caulescent, shrubby, weak. *Leaves* oblong, broad-lanceolar, spotted. *Panicles*, terminal, lax; *flowers* solitary.

A slender, leaning, shrubby species, from three to four feet in height, a native of Sumatra, from thence introduced, by the late Dr. C. Campbell into the Botanic Garden at Calcutta, where it flowers during the hot months of March and April. The variegation of the colour of the leaves makes it interesting and ornamental.

Stems tending to be erect, but from their weak texture, leaning much to one side. *Branches* few, and like the stems; general height of five year old plants, from three to four feet. *Leaves* alternate, approximate, sheathing, from lanceolar to oblong, entire, smooth, strongly marked with circular spots of a deeper, or lighter yellow; from four to eight inches long, and from one to three broad. *Panicles* (in stunted plants *racemes*) terminal; thin, smooth, variously bent. *Flowers* scattered, pedicelled, pretty large, pale greenish yellow. *Bractes* solitary, ensiform, one, rarely two-flowered. *Corol;* tube gibbous; *border* six-parted; *segments* linear, length of the tube. *Filaments* six, inserted on the base of the segments of the border of the corol and of their length. *Anthers* incumbent. *Germ* superior, obovate, three-celled, with one ovula in each, attached to the axis below its middle. *Style* length of the corol. *Stigma* composed of three, roundish, beautiful granulated lobes.

6. D. *cernua*. *Willd*. 2. 157.

Subarboreous. *Leaves* crowded, sessile, narrow-lanceolar, fine-pointed. *Panicles* terminal, drooping, branches few, divaricate. *Flowers* solitary.

Found by Colonel Hardwicke on the Island of Mauritius, in flower in August and September.

7. D. *umbraculifera*. *Willd*. 2. 156.

Subarboreous. *Leaves* cuneiform-lanceolar (that is, taper most toward the base,) acute. *Panicles* terminal, sessile, short, with the ramifications and flowers diverging.

Found by Colonel Hardwicke at the Mauritius; in flower in July and August.

8. D. *terniflora. R.*

Shrubby, erect. *Leaves* lanceolar, petioled. *Raceme* terminal, often panicled; *flowers* tern, pedicelled.

Bunamtol, the vernacular name in Silhet, where it is indigenous amongst the hills which bound that province to the north; there it grows to the height of about eight feet, flowering in February. The seeds take nearly one year to ripen.

Stems slender, nearly erect. *Branches* few and weak. *Leaves* about the extremities of the branches, alternate, approximate, petioled, lanceolar, acuminate, perfectly smooth on both sides, and of a fine texture, slightly marked with many, very fine, scarcely conspicuous, parallel veins, from six to twelve inches long, and, the petiole included, two or three broad. *Petioles* from one to three inches long, stem-clasping, &c. as in the genus. *Racemes* terminal, solitary, rising, curved, often more or less compound, sometimes panicled, nearly as long as the leaves, every part smooth. *Flowers* always in *threes*, pedicelled, delicately slender, colour pale greenish-white. *Pedicels* slender, jointed near the middle, the part below the joint more permanent, and longer than the bractes. *Bractes* an exterior, three-flowered, ovate one, and a smaller within it, to each pedicel; all delicately thin, membranaceous and white. *Calyx* none. *Corol* funnel-shaped; *segments* of the border six, linear, longer than the tube, withering, and becoming spiral. *Filaments* six, from the mouth of the tube, length of the segments. *Anthers* incumbent. *Germ* superior, oval, three-lobed, three-celled, with one *ovula* in each, attached to the lower end of the axis. *Style* longer than the corol. *Stigma* three-lobed. *Berries* rarely more than one of the three lobes of the germ comes to maturity

when it is about the size, and appearance of a fine red cherry. *Seed* solitary, conform to the berry, perisperm conform to the seed, horny, as in the palms. *Embryo* simple, lodged in the base of the perisperm on the outside.

9. D. *atropurpurea. R.*

Shrubby, erect. *Leaves* lanceolar, acuminate, (highly coloured.) *Panicles* terminal; *branches* few, long, simple, and diverging; *flowers* solitary.

Lall Bun-amtol, the vernacular name in Silhet, where it is found wild in the forests, growing to be a tall, scantily branched, caulescent species, with dark purple leaves and inflorescence of from six to eight feet in height; flowering in March and April, and the berries ripening the January following.

Leaves about the ends of the branchlets, short-petioled, lanceolar, acuminate, polished, striated lengthways with innumerable, fine, parallel veins, colour an enchanting, rather dark ferruginous purple; from six to eight inches long, by one to two broad. *Panicles* terminal, solitary, composed of a few, long, diverging branches toward the base, length of the leaves, colour purple, and particularly dark when young. *Flowers* solitary, on jointed pedicels; the part below the joint permanent, and shorter than the bractes. *Bractes* two to each pedicel; one exterior and larger than the other, inserted on the base of the pedicel laterally, and smaller. *Corol, stamina, pistillum,* and *berries,* as in the genus.

SANSEVIERA. Thunb. prod.

Calyx none. *Corol* six-parted, with the stamina inserted on their base. *Germ* superior, three-celled. *Cells* one-seeded; attachment interior. *Berries* from one to three, united, one-seeded.

S. *zeylanica. Willd.* 2. 159. *Corom. pl.* 2. *N.* 184.

Stemless. *Leaves* linear, fleshy, concave, cuspidate. *Racemes* as long as the leaves; *flowers* fascicled. *Berries* drooping, their lobes globular, and slightly united.

Sung. Moorva. *See Asiatick Researches* 4. 271.

Beng. Moorba, Murahara, Murgalie.

Aletris *hyacinthoides zeylanica. Linn.*

We may call it in English Bow-string Hemp.

Teling. Ishama-coda nar.

Aloe zeylanica pumila, of *Plukenet. t.* 256. *Fig.* 5. is no doubt this plant as is also Katu-kapel of *Rheed Malabaricus, vol.* 11. *page* 83. *table* 42, so that I conclude the plant in the King's garden at Kew "*Aletris acaulis foliis lanceolatis carnosis, floribus geminatis*" to be the Guineensis, the fruit of which has lately been so well described, and figured by Gærtner, as to enable me with the more certainty to say that our Indian plant is perfectly distinct. It grows very commonly under bushes, in thin jungle (forests,) in almost every soil. Flowering time the cold and the beginning of the hot season, that is, from the beginning of January till May.

Root perennial, stoloniferous. *Stolones* as thick as the little finger, running under the ground, inserted in sheathing scales. *Stem* none. *Leaves* radical, from four to eight, the exterior ones shortest, spreading most, and considerably broader, the interior ones nearly erect, from one to four feet long, semi-cylindric, grooved on the upper side, each ending in a round, tapering, sharp point, they are all coloured with deeper and lighter green, and somewhat striated, but otherwise are smooth. *Scapes* issuing from the centre of the leaves, from one to two feet long, including the raceme, or flower bearing part, erect, round, smooth, about as thick as a small ratan, between the raceme and the base there are at regular distances, four or five pointed, alternate sheaths. *Racemes* erect, about as long as, or longer than, the scape below the flow-

ers, striated, smooth. *Flowers* middle-sized, greenish white, erect, collected in fascicles of from four to six, on little, regularly distant, tuberosities of the rachis. *Bractes* small, membranaceous. *Pedicles* clubbed, short, ascending, one-flowered. *Calyx* none. *Corol* one-petalled, not in the least wrinkled, funnel-shaped, half six-cleft; *divisions* nearly linear. *Filaments* length of the divisions of the corol, and inserted into the base. *Anthers* linear-oblong incumbent, half two-cleft. *Germ* three-lobed, three-celled, each containing a single *ovula*, attached to the axis. *Style* length of the stamens. *Stigma* three-sided, clubbed, entire. *Berries* one, two or three, slightly united; when single, globular, fleshy, orange-coloured, smooth, the size of a pea, one-seeded. *Seed* globular. *Embryo* simple, lodged near the base of the perisperm on the outside.

Observations.

In a good soil, when the plants are regularly and moderately watered, the leaves grow to be from three to four feet long, and contain a number of fine, remarkably strong, white fibres, which run their whole length. The natives make their best bow strings of these fibres. To separate them from the pulpy parts, they lay a single fleshy leaf, on a smooth bit of board, on one end of which (leaf,) they place one of their great toes, and with a thin bit of hard stick held between the two hands, they scrape the leaf from them, and very quickly remove every part of the pulp. It can also be removed by steeping the leaves in water, till the pulpy parts rot, &c. as is practised with flax, and hemp in Europe, but with me this discoloured the fibres much.

About eighty pounds of the fresh leaves, yielded one pound of the clean dry fibres. These were gathered at

once from a small bed of the plants which I planted about twelve months before in my own garden. The bed was scarcely three yards square, and the leaves upon an average less than two feet long, owing to my having gathered them before they were at their full size. Full grown leaves of three or three and a half feet long yielded in the proportion of one pound of the clean fibres (flax,) for every forty pounds of fresh leaves, for eight pounds of such leaves, yielded me three ounces of clean fibre; hence I conclude that this plant might be cultivated to advantage. For even according to the first mentioned rate, of one pound of the fibres, from a bed of three square yards of the plants, one acre would yield one thousand six hundred and thirteen pounds of the clean flax at a gathering, two of which may be reckoned on yearly, in a good soil, and a favorable season after the plants are of a proper age, mine being only as yet about twelve months old, which I imagine is too short a time for them to have acquired sufficient size, and strength, to yield the best and largest proportion of fibre.

There are certainly a great variety of uses to which these fibres may be applied better than any other substance yet known. I am inclined to think that the fine line, called China grass, which is employed for *fishing lines, fiddle strings, &c.* is made of these fibres.

It grows readily from the slips, which issue in great abundance from the roots, requires little or no care, and as they are perennial, would not require renewing often, if at all ; indeed the bed in my garden requires thinning.

Some years ago, I remember to have seen a bed or two of these plants in Dr. Russell's garden at Vizagapatam, which grew most luxuriantly, more so than mine has done ; which gives reason to think that a rich sandy soil may suit this plant better than our stiffer soil about Samulcota. Should it ever become an object of culture, a less expensive and more expeditious method of

clearing the fibres from the pulpy parts of the leaves, than that of the natives above mentioned, must be contrived; for as they now do it, that alone would involve a greater expence than every other charge.

DIANELLA. Lamarck.

Calyx none. *Corol* six-petalled, the three inner refracted. *Filaments* with glandular apices. *Anthers* perforated at top. *Germ* superior, three-celled; *cells* few-seeded; *attachment* subsuperior. *Berry* three-celled. *Seeds* few (from one to two, in each cell.) *Embryo* in the apex of an ample perisperm.

D. *nemorosa. Lamarck. Encyclop.* 2. 273.

Perennial. *Leaves* cauline, bifarious, ensiform.

Dracæna *ensifolia. Willd.* 2. 158.

Gladiolus odoratus Indicus. *Rumph. Amb.* 5. *t.* 37.

In 1800 the roots were sent from Sumatra, where I am told it is indigenous, to the Botanic Garden at Calcutta, by Dr. Campbell, where the plants thrive well, and continue in blossom and seed most part of the year.

Root fibrous. *Stems* perennial, several from the same root, erect, or nearly so, smooth, jointed at the insertion of the leaves, somewhat compressed. In our plants the naked part of the largest is only as thick as a ratan, and two or three inches high, and the height of the whole, about three feet. *Leaves* cauline, bifarious, alternate, sheathing, spreading, or a little recurved, sword-shaped, keeled on the back, smooth on both sides; edges most minutely serrulate. *Sheathes* compressed, embracing the stem edge-ways, as in the *Irideæ*. *Scapes* from the centre of the leaves, round, smooth, with two or three very short leaves at nearly equal distances. *Panicles* terminal, with ramifications ending in small

umbellets of pedicelled, pale, whitish green, small, inodorous, naked flowers. *Involucres* cordate, spathiform. *Calyx* none. *Petals* six, ovate-oblong, exterior three broader, expanding; inner three refracted, or rigidly bent back. *Filaments* six, inserted between the petals and germ, broad, and rather short, with their apices incurved, each augmented at the apex with a large yellow gland. *Anthers* issuing from the forementioned glands, erect, tapering, with two small round perforations on the top, for the pollen to escape. *Germ* superior, nearly round. *Style* straight, about as long as the stamens. *Stigma* small, somewhat three-dentate. *Berry* three-celled, succulent, size of a large marrow fat pea, smooth, and when ripe, very dark purple. *Seeds* from one to three in each cell, smooth, black, ovate pointed.

I was long inclined to think this a species of Dracæna, but the corol, and stamens differ so widely from any other Indian species of that genus I have yet met with, that I thought it would be better to adopt Lamarck's name.

TETA. (R.)

Calyx none. *Corol* six-petalled, spreading. *Nectary* turbinate; *petal*-bearing. *Anthers* sessile, in the mouth of the nectary. *Berries* from one to three, one-seeded.

T. *viridiflora. R.* (*.)

Found by Dr. Buchanan at Chittagong, and on the eastern border of the Delta of the Ganges, and introduced by that gentleman into the Botanic Garden at Calcutta, where it blossoms in the months of March and April; the seeds ripen in July and August.

Root perennial; from the crown or united bases of the leaves issue many, long fleshy fibres. *Stem* none. *Leaves*

* Probably it may belong to Jussien's natural order *Asparagi.*

radical, petioled, erect, lanceolate, plaited, entire, smooth on both sides, about one foot long. *Scapes* solitary, rising from the centre of the leaves, and about the same length ; lower half destitute of flowers and with here and there a long, curved, pointed scale. *Flowers* numerous, collected in fascicles over the upper half of the raceme, short-pedicelled, small, deep green, inodorous. *Bractes* one, two, or three, to each fascicle of flowers ; ovate, pointed, concave. *Petals* six, nearly equal, cordate, expanding in a double series, inserted on the outside of the nectary. *Nectary* one-petalled, turbinate, quickly contracting into a small, hexangonal mouth through which the stigma, and part of the anthers are seen. *Filaments* scarcely any. *Anthers* six, sessile, distinctly two-lobed, inserted round the inside of the mouth of the nectary. *Germ* superior, ovate, somewhat three-lobed, three-celled, with two *ovula* in each, attached to the lower part of the axis. *Style* short. *Stigma* large, three-sided, rather within the mouth of the nectary. *Berries* from one to three come to maturity, obovate, smooth, succulent, dark-bluish-olive colour, the size of a pea. *Seeds* solitary.

The plant is elegant in its foliage, even when destitute of flowers, but much more so when in blossom. The very uncommon deep green colour of the flowers, makes it particularly interesting.

POLYANTHES. Schreb. gen. n. 576.

Calyx none. *Corol* funnel-shaped, recurved, equal. *Filaments* inserted into the mouth of the tube. *Germ* in the bottom of the corol.

P. *tuberosa. Willd.* 2. 164.
Leaves linear, shorter than the scape.

Amica nocturna. *Rumph. Amb.* 5. *p.* 285. *t.* 98.
Hind. Gool shubbo.
Beng. Rujunee-gundha.
In Gardens only, where both the single and double varieties blossom all the year, but chiefly during the rains.

ALOE. Schreb. gen. n. 581.

Calyx none. *Corol* erect, with the mouth expanded; bottom nectar-bearing. *Filaments* inserted on the receptacle.

A. *perfoliata. Willd.* 2. 185.
Leaves ensiform, dentate, erect. *Flowers* racemed, reflected, cylindric.
Kadenaku, vel catevala. *Rheed. Mal.* 11. *t.* 3.
Taruni. *Asiatick Researches.* 4. 272.
Sans. Ghrita-koomaree.
Beng. Ghrita-koomaree.
Hind. Gheekoomar. The gum Elwa.
It is common in gardens throughout India.

AGAVE. Schreb. gen. n. 582.

Calyx none. *Corol* erect, superior. *Filaments* longer than the corol, erect.

A. *Cantula. R.*
Stemless. *Leaves* spino-dentate. *Scape* ramous. *Tube* of the corol contracted at the middle. *Stamina* much longer than the corol. *Style* about the same length.
Aloe *Americana. Rumph. Amb.* 5. *t.* 94.
Sans. Kantula, which induces me to think it indigenous. Bilatee-ananas, (i. e. Europe Pine apple) is the Hindoo name, which seems to imply that this plant is not a native

of India. Be that as it may, it is now common every where. In Bengal the plants blossom in May and June, when from ten to fifteen years old, and are then from twenty to thirty feet high.

HEMEROCALLIS. Schreb. gen. n. 58

Calyx none. ***Corol*** campanulate ; ***tube*** cylindric. ***Stamina*** declinate.

1. H. *fulva. Willd.* 2. 197.

Leaves bifarious, linear, acute, keeled, smooth. ***Scapi*** twice the length of the leaves. ***Stamina*** ascending, the length of the revolute divisions of the corol.

It is only, as far as I know, found in our gardens ; it may not therefore be a native of India, though known to the native gardeners by the Hindoo name *Gool nurgus (Narcissus)*. It was introduced by Dr. W. Carey into the Botanic Garden at Calcutta from Dinagpoor, where if not indigenous, it may have been carried thither from China, its native country through Bootan.

2. H. *cordata. Thunb.*

Leaves round-ovate-cordate, many-nerved, acuminate ; ***petioles*** deeply channelled, with winged margins.

From China this elegant plant has been introduced by Mr. W. Kerr, into the Botanic Garden at Calcutta, where it thrives luxuriantly, and blossoms during the latter part of the rains. The leaves are about eight inches long by six broad ; the petioles rather longer than the leaves. The racemes about two feet high, bearing about twenty, alternate, large, six inches long, pure white, fragrant flowers, which expand about sun set, and droop in the morning.

ACORUS. Schreb. gen. n. 586.

Spadix cylindric, covered with florets. *Corol* six-petalled, naked. *Style* none. *Capsule* three-celled.

A. *calamus. Willd.* 2. 199.
The point of the scape very long and leafy.
Vaembu, *Rheed. Mal.* 11. *t.* 48.
Sans. Vucha.
Beng. Buch, or shwet-buch. Gora-buch.
Sweet flag, or Calamus aromaticus. Mat. Med.
It is common in gardens throughout India.

TACCA. Schreb. gen. n. 588.

Calyx six-parted, staminiferous. *Corol* none. *Stamina* vaulted. *Germ* inferior, one-celled ; *ovula* numerous, attached to three equidistant parietal receptacles. *Berry* one-celled. *Seeds* many. *Embryo* subcentrifugal ; and furnished with a perisperm.

1. T. *aspera. R.*

Leaves oblong, entire ; *petioles* and *scapes* scabrous.

Found by Mr. J. R. indigenous in the vallies amongst the hill behind Chittagong ; from thence it was introduced into the Botanic Garden at Calcutta where it blossoms during the hot and rainy season, and the seeds ripen three or four months after.

Root an oblong, curved tuber, of a middling size, with wiry fibres from its sides ; inward colour pale yellow ; perennial. *Stem* none, or very trifling. *Leaves* radical, petioled recurvate, oblong, entire, acuminate, smooth, strongly marked with parallel veins, and somewhat bullate ; from eight to sixteen inches long, and from four to eight

broad. *Petioles* shorter than the leaves, sheathing at the base, and above that having a groove down the inside, the whole considerably rough,with small visible sharp points. *Scapes* axillary, solitary, about as long as the petioles, and rough like them, cylindric, direction from erect to diverging, and often variously bent. *Involucre* four-leaved, besides many filiform filaments,which are mixed amongst the pedicels. Exterior two leaves of the involucre stem-clasping, reflexed, broad ovate-lanceolate, finely acuminate, many-nerved, two or three inches long, and one and a half broad. The interior pair much longer, broad-petioled, ascending in the form of a vault over the flowers, oval-ventricose, many-nerved, smooth and coloured; length, petioles included, about five inches, and three broad. *Flowers* from four to eight, long-pedicelled, large, at first nearly erect, but on the second day of expansion drooping, colour, a mixture of greenish purple and yellow; about the same number of very long, filiform, smooth pendulous bodies are found interspersed among the pedicels. *Calyx* superior, one-leaved; *base* bowl-shaped; *border* consisting of six large coloured segments; *exterior* three, rather narrow, more pointed, and less deeply coloured; *inner* three, oblong, obtuse, or emarginate, soon after expansion becoming completely reflex. *Corol* no other than the segments of the border of the calyx, which very much resembles one. *Filaments (petals* of *Forster)* six, inserted about the middle of the tube of the calyx, resembling little conic vaults. *Anthers* on the inside of the exterior *wall* of the vaults. *Germ* inferior, clavate, six-ribbed, one-celled, containing numerous *ovula*, attached to three bifid, parietal receptacles. *Style* short. *Stigma* three-lobed; *lobes* large, coloured, emarginate on the exterior edge. *Berry* oblong, fleshy, an inch and a half long, and one broad, six sharp-ribbed, crowned with three semilunar marks, the remains of part of the calyx, one-celled. *Seeds* numerous, attached to three

divided parietal receptacles, reniform, ribbed. *Integument* single, tough, dark brown.

2. T. *lævis. R.*

Leaves oblong, entire; *petioles* and *scapes* smooth.

Moti munda, the vernacular name in Silhet, where it is indigenous, and from whence it was introduced into the Botanic Garden at Calcutta, where it blossoms during the hot, and rainy season.

Root a subcylindric, perennial tuberous body furnishing numerous dark brown fibres, which penetrate the soil in every direction. *Stem* none. *Leaves* radical, petioled, oblong, acuminate, entire, smooth on both sides; general length about twelve inches, and the breadth five or six. *Petioles* about as long as the leaves, base sheathing, above the sheathing part cylindric, and slightly grooved on the inside, every part perfectly smooth. *Scapes* axillary, solitary, shorter than the petioles, round, smooth, of a dark green purple colour; direction more or less recurved. Involucre four-leaved; *leaflets* equal, and equally disposed crosswise in opposite pairs, sessile, ovate, finely acuminate, smooth, many-nerved, about two inches long, and one broad. *Flowers* from six to twelve in the umbel, intermixed with many long, filiform filaments, pretty long pedicelled, large, of a dark greenish grey violet colour. *Calyx* one-leaved; *tube* or *base* bowl-shaped, and permanent; *border* six-parted; three exterior *segments* rather longer, narrower, and more pointed than the inner three, which are broader, all deciduous. *Filaments* six, inserted into the tube of the calyx near its base, vaulted, with the linear, two-lobed *Anthers* attached to the inner side of the vault. *Germ* inferior, clavate, turbinate, three-sided, six-keeled, one-celled, and containing numerous *ovula*, attached to three bifid parietal receptacles. *Style* short. *Stigma* of three rather recurved double lobes, alternate with the stamina.

3. T. *pinnatifida. Willd.* 2. 200. *Forst. gen. N.* 35.
Leaves pinnatifid. *Involucre* many-leaved.

Tacca littorea. *Rumph. Amb. vol.* 5. *t.* 114, table 112 of the same, though quoted for a variety of this by Forster, is an *Arum* figured and described by me under the name *A. campanulatum.*

Lekin of the inhabitants of the town of Malacca.

Tacca *pinnatifolia. Gœrt. sem.* 1. *p.* 43. *t.* 14. *f.* 2.

A native of the Moluccas, and Malay countries, and from the latter introduced by Dr. Harris, of Madras into the Company's Botanic Garden at Calcutta in 1800, where it blossoms in June and July. *Seeds* ripen in October.

Root tuberous, perennial, often as large as a child's head, round, and pretty smooth; with but few slender fibres from its surface, intensely bitter when raw, but yielding a great quantity of beautifully white starch, of which the best flour for confectionary, puddings, &c. is made. *Leaves* radical, petioled, three-parted; *divisions* bi-tri-partite and ultimately pinnatifid, with waved margins, smooth on both sides, length and breath almost equal, and often two or three feet each way. *Petioles* columnar, slightly grooved, from one to three feet long. *Scapes* radical, round, tapering, smooth, naked, nearly twice the length of the petioles, slightly grooved, and striped with darker and paler green. *Umbel* simple, composed of from ten to forty long-pedicelled, drooping, greenish flowers, intermixed with about as many long, slender, smooth, simple, drooping filaments or bractes. *Involucre* from six to twelve leaved; *leaflets* lanceolate, recurvate, beautifully marked with pale purple veins. *Calyx* superior, one-leaved, globose, fleshy, permanent, six-parted; *segments* obtuse, incurved, alternately broader, green, with the margins somewhat purple. *Corol* none, as I consider what Forster so calls to be the stamina. *Filaments* six, short, with broad, coloured mar-

gins, inserted on the segments of the calyx; *apices* white, vaulted inwards over the stigma. *Anthers* linear, two-lobed, attached to the middle of the vault, with their apices outwards. *Germ* beneath, turbinate, six-sided, crowned with three large, hairy, convex, purple glands, one-celled. *Seeds* many, attached to three equidistant, parietal receptacles. *Style* short, rising from the centre of the three purple glands, and evidently composed of three united into one. *Stigma* broad, peltate, composed of three, two-lobed divisions. *Pericarp; berry* nearly round, size of a pigeon's egg, crowned with the withered calyx, and marked with six, protuberant, equidistant, vertical ribs, smooth, when ripe yellow, one-celled. *Receptacles* as in the germ. *Seeds* numerous, attached to the three parietal receptacles, as in the germ, oval, or ovate, longitudinally furrowed, light brown, each enveloped in a small portion of colourless, succulent pulp, which may be termed a complete aril. *Integuments* two, *exterior* spongy; *interior* a thin, reticulate, white membrane. *Perisperm* conform to the seed, rather succulent while fresh. *Embryo* minute, and lodged in the end of the perisperm next to the (umbilicus,) subcentrifugal.

CANARINA. Schreb. gen. n. 603.

Calyx six-leaved. *Corol* companulate. *Stigmas* six. *Capsule* inferior, six-celled, many-seeded.

C. *moluccana. R.*

Erect, smooth. *Leaves* opposite, short-petioled, ovate oblong, serrate, smooth. *Flowers* terminal, and axillary. *Calyx* subpinnatifid.

A native of the Moluccas. The specimens seen are herbaceous. The number six prevails throughout the flowers.

CORYPHA. Schreb. gen. n. 1694.

Spathes many ***Spadix*** (terminal) supra-decompound. ***Preianth*** three-toothed. ***Corol*** three-petalled. ***Germ*** superior, three-celled; ***cells*** one-seeded; ***attachment*** inferior. ***Berries*** from one to three, conjoined, globose, one-seeded. ***Embryo*** in, or near the apex of the perisperm. Gærtner says he found it in the base of the perisperm in *umbraculifera.*

1. C. *Talliera. R.*

Leaves subrotund, palmate-pinnatifid, plaited; ***segments*** forty pair, margins of the channel of the petioles armed. ***Inflorescence*** pyramidal, the length of the trunk of the tree.

Sans. Tali.

Beng. Tara, Tallier. Tareet.

This elegant, stately Palm, is a native of Bengal, though scarce in the vicinity of Calcutta. Flowering time the beginning of the hot season. The seeds ripen about nine, or ten months afterwards.

Trunk perfectly straight, about thirty feet high, and as near as the eye can judge equally thick throughout, of a dark brown colour, and somewhat rough with the marks left by the impression of the fallen leaves. ***Leaves*** palmate-pinnatifid, plaited, subrotund. ***Leaflets*** or divisions of the frond united rather more than half way, numerous, generally about eighty, or forty pairs, linear-lanceolate, pointed until broken by the wind, or otherwise, polished on both sides, with a strong somewhat four-sided rib running their whole length; generally about six feet long, greatest breadth about four inches. The thread which forms part of the *Linnæan specific character* of *corypha umbraculifera*, is sometimes present, sometimes wanting, at best such perishable marks deserve no notice. ***Petioles*** from five to ten feet long, remarkably strong, upper side

deeply channelled, the sharp margins armed with numerous, short, strong, dark-coloured polished, compressed spines. *Spathes* just as numerous as the primary and secondary ramifications in the spadix, all smooth, and obtuse. *Spadix* supra-decompound, issuing in the month of February from the apex of the tree, and centre of the leaves, forming an immense, diffuse, ovate panicle, of about twenty or more feet in height, so that the height of the whole tree, form the ground to the top of the spadix is now about fifty feet. Primary branches alternate, round, spreading nearly horizontal, with their apices ascending. Secondary ramifications alternate, bifarious, compressed, drooping, recurved, soon dividing into numerous, variously curved, smaller, subcylindric, branchlets, covered with innumerable, small white, odorous, subsessile flowers. *Calyx; perianth* inferior, minute, obscurely three-toothed. *Petals* three, oblong, concave, fleshy, smooth, expanding, many times larger than the perianth. No nectary. *Filaments* six, nearly of the length of the petals, at the base broad, and in some measure united. *Anthers* ovate. *Germ* above, three-lobed, three-celled with the embryo of a distinct seed in each, attached to the bottom of its cell. *Style* shorter than the stamina. *Stigma* simple. *Berries* from one to three conjoined, though one is the most common, and then the rudiments of the other two are present, they are singly quite round, about the size of a crab-apple, when ripe, wrinkled, and of a dark olive, or greenish yellow colour. The pulp is but in small proportion, and yellow when the fruit is ripe. *Seed* solitary, round, attached to the base of the berry, of a white colour, and horny substance, with a small vacuum in the centre. *Embryo* lodged in the apex, which circumstance alone, is sufficient to distinguish it from *Gœrtner's Crypha umbraculifera.*

The leaves of this tree are employed by the natives, to write on with their pointed steel bodkins, and also to

tie the rafters of their houses, for they are said to be strong and durable. I do not find that the wood is applied to any useful purpose.

2. C. *elata. R.*

Leaves lunate-cordate, palmate-pinnatifid, plaited; *segments* from forty to fifty pair; *stipes* armed. *Inflorescence* globular, one-fourth the length of the trunk of the tree.

Beng. Bujoor, or Bujur-batool.

This stately palm is a native of Bengal, where it flowers in March and April; the seeds require about twelve months to ripen.

Trunk straight, but often varying in thickness. I have two trees, which were pretty well ascertained to be about thirty years old when in flower; one was seventy feet to the base of the inflorescence, the other about sixty; circumference near the root eight feet, and about the middle of the trees five and a half or six; their whole length strongly marked with rough, dark coloured, spiral ridges, and furrows, which plainly point out the spiral arrangement of the leaves. The ligneous fibres, as in the order, are on the outside, forming a tube for the soft spongy substance within, of a dark chocolate colour, tough and hard, but by no means equal, in either quantity or quality, to the very serviceable wood of *Borassus flabelliformis.*

Leaves (fronds,) round the top of the trunk, immediately under the base of the inflorescence, numerous, palmate pinnatifid, plaited from eight to ten feet each way; *segments* generally from forty to fifty pair, united about half their length, ensiform, apices rather obtuse and bifid, texture hard, smooth on both sides. When the tree begins to blossom, the leaves wither and soon fall off, leaving the fructiferous part naked. *Petioles (stipes)* from six to twelve feet long, concave above, with the

thin, hard, black margins thereof cut into numerous, very short, curved spines. *Spathes* numerous, there being one at each joint of the various ramifications of the spadix, all smooth and when recent, of a pale yellowish green. *Inflorescence,* (spadix) terminal; it may be called an immense, more than supra-decompound, round panicle; in this species it is of a much smaller span than the leaves, and only about one fourth or one fifth part of the whole height of the tree; the various and innumerable ramifications are always alternate, smooth and of a pale yellow colour. *Flowers* small, sessile, collected in little bundles over the ultimate divisions of the panicle, pale yellow, small, rather offensive. *Calyx* small, three-toothed. *Petals* three, oblong, reflexed, shorter than the stamina. *Filaments* six, broad at the base, and there united, toward the apex, slender and incurved. *Anthers* ovate. *Germ* superior, round-ovate, three-lobed, three-celled, with one *ovula* in each, attached to the bottom of its cell. *Style* short, three-grooved. *Stigma* three-lobed. *Berry* globular, the size of a musket ball, olive-coloured, smooth when fresh, but it soon becomes dry and wrinkled, one-celled; the two abortive lobes of the germ are always to be found at the base. *Seed* solitary, subglobular. *Integuments,* apparently two, but they are firmly united, and of a friable texture; the *exterior* one pale yellowish brown, and veined; the *interior* one brown, and adhering firmly to the perisperm. *Perisperm* conform to the seed, of a hard, horny texture, and pale gray colour. *Embryo* simple, short, cylindric, lodged near the apex of the perisperm.

3. C. *umbraculifera. Willd.* 2. 201. *Gært. sem.* 1. 18 *t.* 7.

Leaves sublunate, palmate-pinnatifid, plaited. *Segments* from forty to fifty pair; *petioles* armed. *Inflorescence* pyramidal, equalling the trunk of the tree, (*Embryo* in the base of the seed. Gært.)

Codda-pana. *Rheed Mal.* 3. *t.* 1-12.
Talipat. *Knox. hist. of Ceylon.*
Cing. Tala, or Talagas.
Tam. Conda-pani.
This is an intermediate species, (with regard to size,) between *Taliera* and *Elata.* From Ceylon it has been introduced about nine years into the Botanic Garden at Calcutta. The seeds were fully as large as those of *Taliera,* consequently much larger than in *Elata.* This alone is a sufficient mark in a tree of this nature to distinguish it from *Elata*; infortunately I did not examine the situation of the *embryo,* we must therefore take it for granted that Gærtner was correct in placing it in the base of the seeds; our young trees, are only now, when nine years old, beginning to exhibit the first appearance of a trunk.

In the same Garden are plants of *Taliera,* of the same age; their appearance at this period is so very different as to announce their being distinct species.

4. C. *Utan. Lamarck. Encyclop.* 2. 131.

Leaves semicircular, palmate, pinnatifid, plaited; *segments* from twenty-five to thirty pair; *petioles* very long, and much armed.

Lontarus silvestris. *Rumph. Amb.* 1. 56 *t.* 11.

A native of the Moluccas. One young tree of this species is in the Botanic garden at Calcutta; it was brought from Amboyna; though now about twelve years old, it only begins to form the appearance of a trunk, which, at present promises to be longer than in *umbraculifera.* The stipes or petioles are much longer than in any of the other species, and the leaves expand little more than half a circle, as in Rumph's figure, and have only about half the number of segments the others have.

LICUALA. Schreb. gen. n. 1691.

Calyx three-toothed. ***Corol*** three cleft. ***Germ*** superior, three-lobed, three-celled. ***Cells*** one-seeded; ***attachment*** inferior. ***Style*** single. ***Stamina*** simple. ***Drupe*** one-celled, one-seeded. ***Embryo*** a little above the base on the inside.

1. L. *peltata. R.*

Fronds palmate, orbicular, peltate. ***Stipes*** armed. ***Drupe*** turbinate; no ***nectary***.

This small *palm* is a native of the woody mountainous parts near Chittagong, which separate that province from the Burma dominions; it was brought from thence to the Botanic Garden at Calcutta by Mr. William Roxburgh, where it blossoms in November and ripens its seed in May.

Trunk, in our young trees, short, and entirely embraced by the base of the petioles, and a web of coarse, light brown fibres, down to the ground; in that state it is about as thick as a man's thigh. ***Leaves*** (fronds,) alternate, long-petioled, orbicular, peltate, smooth, divided to the base into from twenty to twenty-five wedge-shaped, dentate-truncate, plaited portions; the superior two, or more, are much broader and longer, being composed of from ten to fifteen ribs, while the lateral, and inferior ones are composed of from three to five only; the apices of these ribs taper off conically, and have their points bifid, the breadth or length of the whole leaf, for they are nearly the same size, from three to four feet. ***Petioles*** or stipes spreading, three or four feet long, nearly triangular, having the two lateral edges armed with numerous, dreadful, strong, variously curved, smooth, dark brown, sharp spines of different sizes; toward the base channelled, stem-clasping, and firmly tied over each other, and round the trunk, by a

web of strong, coarse, light brown fibres, which issue from the margins, and begin where the spines end. *Spadices* axillary, solitary, rising several feet above the leaves, their whole length being from ten to fifteen feet, of one uniform thickness, which is that of a man's fore-finger; from the upper part, at the distance of about a foot from each other, issue pendulous, cylindric spikes of about a foot and a half long beyond the spathe; these are wholly covered by numerous, sessile, diverging, pretty large, greenish white, inodorous flowers. *Spathes* seven or eight, tubular,embracing the whole of the spadix; from the mouths of the last four or five, the pendulous spikes issue; all the tender parts are covered with a large portion of ferruginous dust. *Calyx* inferior, one-leaved, campanulate; *mouth* obscurely three-toothed; outside sericeous, permanent. *Corol* one-petalled, outside sericeous, permanent. *Tube* campanulate, the length of the calyx. *Borders* three-cleft; *divisions* expanding and tapering to rather obtuse points. No *nectarium*. *Filaments* six, short, broad at the base, and inserted round the inside of the mouth of the tube of the corol. *Anthers* sagittate. *Germs* three, forming a short, turbinate, truncate body, like a single germ, but perfectly distinct, except the base of the *style*, which is about as long as the stamina, and rises equally from the three, and keeps them together. *Stigma* simple. *Drupe* obovate, the size of a field bean; a little to the inside of the vertex a three-cornered, three-toothed tubercle marks where the style joins this fertile lobe of the germ to the two abortive ones; when ripe orange-red, and smooth, one celled. *Pulp* in considerable quantity, orange-coloured. *Nut* conform to the drupe, much pointed below; above are three slight elevations running from a point under the tubercle of the drupe, hard, dark brown, one-celled. *Seed* single, conform to the nut. *Integuments* a single, very thin, brown membrane. *Perisperm* conform to the seed, horny, from the back a ferruginous spongy body

penetrates to, or beyond the centre, and there enlarging, it occupies a considerable space. *Embryo* lodged in a conic pit, a little above the base on the inside.

2. L. *spinosa. Willd.* 2. *p.* 201.

Leaves digitate-palmate. *Spadix* shorter than the armed petioles.

Licuala arbor. *Rumph. Amb.* 1. *t.* 9.

Corypha *licuala, frondibus palmatis foliolis linearibus nervosis apice præmorsis. Petiolis basi spinosis, spadice erecto stricto. Lamarck. Encyclop.* 2. 131.

ACHRAS. Schreb. gen. n. 593.

Calyx six-leaved. *Corol* six-cleft, with scales on the inside. *Germ* superior, from eight to ten celled ; *cells* one-seeded ; *attachment* interior. *Berry* from eight to ten celled. *Seed* solitary. *Embryo* erect, and furnished with a perisperm.

A. *Sapota. Willd.* 2. 224.

Flowers solitary. *Leaves* lanceolar, lucid.

A native of China, from thence introduced into the Botanic Garden at Calcutta, where growing in the same place with the West India tree they are not to be distinguished from it. The China trees have not yet blossomed, but those from the West Indies flower in the hot season, and the fruit ripens in the rains.

BERBERIS Shreb. gen. n. 595.

Calyx six or more, leaved. *Corol* six-petalled ; at the base are two glands. *Germ* superior, one-celled two or more-seeded ; *attachment* sub-inferior. *Berry* from two to three-seeded. *Embryo* erect and furnished with a perisperm.

1. B. *asiatica. R.*

Shrubby. *Leaves* obovate-oblong, hard, spinous-toothed. *Spines* triple. *Racemes* axillary. *Pedicels*, and *flowers* erect. *Nectarial* glands subcylindric. *Germs* from five to six-seeded.

Berberis ilicifolia. *Asiat. Researches. 6. p.* 357.

A native of the mountainous countries north of Hindoosthan, where it was first observed by Captain Hardwicke, on his journy to Shreenagur, and afterwards found by Dr. Buchanan in Napal, from whence the latter sent seed to the Botanic Garden at Calcutta in 1802; in April 1808 the plants therefrom blossomed for the first time. In appearance it resembles the common Berbery bush of Europe.

Stems several from the same root, bending much to one side. *Branches* slender, after the first year spreading and drooping; *young shoots* angular, and furrowed. *Bark* of the old ligneous parts of a light ash colour, and yellow within; and so is the wood; the height of our shrubs now when seven years old, is from four to eight feet. *Spines* three, rarely five-fold from one base, straight, strong, and sharp. *Leaves* in fascicles in the axills of the spines, subsessile, obovate, and oblong; *margins* spinous, with circular sinuses between, texture hard, smooth on both sides, but reticulate with veins; from one to two inches long. *Stipules* small, subulate, petiolary, having some small scales intermixed with the insertions of the leaves. *Racemes* solitary, from the centre of the fascicles of leaves, many-flowered. *Pedicels* often as long as the racemes, straight, one-flowered; sometimes there is no raceme, and then several, long-pedicelled flowers occupy its place. *Flowers* rather large, pure yellow. *Bractes* at the base of the pedicels triple, one-flowered, ovate, acute. *Calyx* about nine-leaved, imbricate. *Leaflets* unequal, yellow, smooth. The *exterior* three minute, and may be called bractes; the next three larger; the *inner* three still larg-

er, and nearly as long as the petals. *Petals* six, in two series, round-obovate; exterior margins a little notched and curled in over the anthers. *Nectarial* glands subcylindric. *Filaments* shorter than the petals, and opposite to them, thick at top. *Anthers* a polleniferous, oblong, operculated pit on each side near the apex. *Germ* oblong, one-celled, on the inside is a ridge; four, five, or six seeds are attached to its base. *Style* scarcely any. *Stigma* large, peltate, with a pit in the centre. *Berries* ovate, rather larger than the common *berbery* of Europe, smooth, with red, succulent, acid pulp; colour a dark purple, with a bloom over it, like that of the common plum, one-celled. *Seeds* two or three, attached as in the germ, oblong, somewhat rugose. *Integuments* two; the *exterior* one thick, spongy, and brown; the *inner* one membranaceous. *Perisperm* conform to the seed, yellow. *Chalaza* large and conspicuous on its apex. *Embryo* nearly as long as the perisperm, straw-coloured, erect. *Cotyledons* oblong. *Radicle* subcylindric, inferior.

2. B. *angustifolia. R.*

Shrubby. *Racemes* simple; *pedicels* one-flowered. *Spines* single. *Leaves* lanceolar. *Germ* two-seeded.

Found by Francis Pierard, Esq. on the mountains north of Rohilkhund, and Hurdwar.

Spines oftener single than triple, straight, diverging. *Leaves* fascicled in the axills of the spines, sessile, lanceolar, rather rounded at the apex, with a minute spinous point, some of them have a small spinous toothlet on one or both margins, but are otherwise entire, tapering most toward the base; smooth, veined, texture hard, the length from one to two inches, and generally less than half an inch in breadth. *Racemes* axillary, the length of the leaves, solitary. *Flowers* solitary, long-pedicelled, small. *Bractes* oblong, concave, acute, solitary at the base of each pedicel, and sometimes one or two smaller ones near the top. *In*

B. asiatica, they are triple at the base of the pedicels. *Calyx* nine-leaved; *leaflets* in three series; the *exterior* three minute; the *inner* three nearly as long as the petals. *Petals* six-obovate, entire. *Nectarial* glands oblong. *Filaments* inserted into the base of the petals. *Anthers* a long operculated pit in each side of the filaments, just under the apex. *Germ* oblong, one-celled, containing two seeds, attached to the bottom of the cell. *Style* short. *Stigma* peltate, glandular.

3. B. *pinnata. R.*

Leaves unequally pinnate; *leaflets* grossly spinous, dentate. *Racemes* terminal.

Candingne young more, is the vernacular name in the Munipoor Country, where it is indigenous. It flowers in November.

Thunberg's figure of his *Ilex Japonica* is so very like this plant, as to induce me to think they may be the same.

NANDINA. Schreb. gen. n. 596..

Calyx many-leaved, imbricated. *Corol* six-petalled. *Berry* one-celled, two seeded. *Embryo* inverse, and furnished with a perisperm.

N. *domestica. Willd.* 2. 230. *Thunb. Jap.* 147. *Gært. sem.* 2. 69. *Bot. Mag.* 1109.

Said to be a native of Japan; it was introduced from Canton in China into the Botanic Garden at Calcutta by Mr. William Kerr.

LORANTHUS. Schreb. gen. n. 600.

Calyx uncertain. *Corol* generally one-petalled and often irregular. *Germ* inferior, one-celled, one-seeded; *attachment* superior. *Berry* one-seeded. *Embryo* inverse, and furnished with a perisperm.

1. L. *bicolor. Corom. pl.* 2. *N.* 139.

Leaves opposite, oblong, smooth. *Racemes* axillary. *Corols* irregular, five-cleft. *Stamens* five. *Berries* oblong.

Beng. Bura-manda.

Vanda is the Sanscrit name. Sir William Jones thought this the general term for all *Parasitic plants.*

Compare with *Loranthus longiflorus*, and also with *falcatus. Willd.*

Teling. Yellinga-wodinaka (wodinaka means parasitical.)

It is always found growing upon the branches of various kinds of trees, and is very ramous. It flowers during the greatest part of the year, and is highly ornamental.

Trunk scarcely any. *Branches* numerous, ascending, woody, bark grey. *Leaves* nearly opposite, sessile, or very short-petioled, from oval to linear-lanceolate, waved, entire, reclined; veins scarcely any; from three to five inches long, and from one to one and a half broad. *Racemes* axillary, single, simple, sub-erect, many-flowered. *Flowers* in size and appearance much like those of the honey suckle. *Bractes* a small, concave, cordate one, presses on the base of the germs on one side. *Calyx* there is no other *perianth* of the fruit, than the above mentioned bracte; that of the flower, cup-shaped, entire, permanent. *Corol* one-petalled. *Tube* long, a little curved, swelling from the bottom to within a third of the mouth, it then contracts a little; *border* five-parted, the upper fissure much the deepest; *segments* linear, reflexed towards one side. *Filaments* five, from the base of the segments of the corol, short. *Anthers* linear. *Germ* superior, naked. *Style* the length of the corol. *Stigma* clubbed. *Berry* inferior, crowned with the remaining calyx, oblong, smooth, pulpy, one-celled. *Seed* single.

This is a handsome looking parasite, bearing a great number of very beautiful flowers; its foliage also looks

very well; all that part of the branch of the tree above where it grows, becomes sickly, and soon perishes.

This species differs from *Gærtner's Lonicera zeylanica*, in being without the calyx of the fruit, and having only five parts in the corol, &c. but in the raceme they agree. Nor can I reconcile it to be L. *falcatus* of the supplementum, nor L. *loniceroides* of Linnæus, for here the inflorescence bears no resemblance to an involucred umbel. Neither can it be *L. pentandra*, as there the leaves are alternate, with petioles nearly as long as the racemes, in short I cannot well reconcile it to any of the hitherto described species. It unites the two genera of *Loranthus* and *Lonicera*.

In Bengal I have found it with leaves from five to six inches long, and from four to five broad.

2. L. *scurrula*. *Willd.* 2. 232. *Corom. pl.* 2. *N.* 140.

Leaves opposite, ovate, underneath downy. *Flowers* axillary, fascicled. *Corol* irregular, four-cleft. *Stamens* four. *Berries* turbinate.

The natives have no other name for this than *Wodinika*.

It is a parasiatical shrub, but smaller considerably than the last, and much scarcer; it grows upon branches of trees in the same manner, and flowers during the hot season.

Leaves opposite, petioled, cordate, scolloped, covered with soft white down underneath; about two inches long, and one and a half broad. *Peduncles* numerous, collected in the axills, one or more flowered. *Flowers* considerably smaller than in the last, a rusty grey colour, and covered with grey, farinaceous dust. *Bractes* one, pressing on the germ, as in the last species. *Calyx* of the fruit no other than the bracte of the flower, as in the former. *Corol* one-petalled. *Tube* swelled towards the base. *Border* four-parted; upper fissure deepest; *divisions* linear, reflexed.

Stamens four; the *pistillum* as in the last. *Berry* top-shaped, one-seeded.

3. L. *globosus. R.*

Leaves opposite, oblong, smooth. *Spikes* axillary. *Corols* regular, six-cleft. *Berries* round-oval.

Kanneli itti-kanni. *Rheed. Mal.* 10. *t.* 5.

Beng. Chota-manda.

A ramous, shrubby parasite, like the two species already described; it is common on trees all over Bengal and flowers all the year.

Leaves generally opposite, though sometimes alternate, and also three-fold, short-petioled, oblong, smooth, entire, of a thick leathery texture, almost veinless; from two to three inches long. *Racemes*, (or rather spikes,) axillary, or between the leaves, or from the old axills; generally solitary, though sometimes there are two, or even three together, much shorter than the leaves. *Flowers* opposite, from three to six pair in the spike, sessile, small, of a greenish-orange colour. *Bractes* no other than the perianth of the fruit. *Calyx; perianth* of the fruit inferior, two-leaved, the under and *exterior* cordate; the *inner* two-toothed; that of the flower is no other than the circular margin of the pit, which receives the flower. *Corol* one-petalled; *tube* gibbous, six-sided. *Border* six-parted; *divisions* alike, and cut equally deep, reflected. *Filaments* six, erect, inserted into the base of the divisions of the corol. *Germ* ovate. *Style* length of the stamens. *Stigma* large, glandular, naveled. *Berry* inferior, round, oval, the size of a pea, smooth; when ripe the pulp is yellow, clammy, and elastic, which makes it adhere to the branches of trees where it terminates, resting on three permanent calyciform bractes and crowned with a ring where the corol stood, round the permanent base of the style, one-celled. *Seed* solitary, conform to the berry. *Integument* single, white, tough, and clammy, marked

with twelve whitish striæ. *Perisperm* conform to the seed, six-grooved, green. *Embryo* central, inverse, straight, pale green, nearly as long as the perisperm. *Cotyledons* two, linear-oblong. *Plumula* minute. *Radicle* subcylindric, the length of the cotyledons, superior. Birds are fond of the berries.

4. L. *ferruginosus. R.*

Young shoots, as well as the under side of the oval leaves, long, slender, tetrandrous, regular; flowers, fruit, and pedicels, all clothed with much ferruginous pubescence.

Found by Mr. William Roxburgh, growing on trees in the forests of Pulo Pinang.

5. L. *involucratus. R.*

Leaves opposite, ovate-cordate, smooth. *Umbellets* axillary; *involucres* four-leaved, four-flowered; *flowers* regular, pentandrous.

A stout, parasitical shrub, found on trees in the forests of Chittagong, Silhet, &c. where it blossoms the greater part of the year.

Branches while young clothed with smooth, shining, dark brown bark. *Leaves* opposite, short-petioled, ovate, and ovate-cordate, sides often unequal, as in most of the plants of this genus, entire, smooth on both sides; from three to four inches long. *Umbellets* axillary, crowded, subsessile, much shorter than the leaves. *Involucres* four-leaved, four-flowered; *leaflets* ovate-lanceolate, smooth, entire. *Flowers* sessile, pretty large, equalling the involucre. *Calyx* superior, short, five-toothed, villous. *Corol; tube* widening toward the mouth, villous. *Border* regular, five-parted. *Segments* linear, revolute. *Filaments* equalling the segments of the corol, and inserted on them below their middle. *Anthers* oval. *Germ* oval, sericeous. *Style* rather longer than the corol. *Stigma* two-lobed.

6. L. *ampullaceus. R.*

Leaves opposite, oblong, polished. *Racemes* axillary, simple. *Flowers* calycled, regular, hexandrous; *tube* of the corol gibbous. *Berries* long-oval.

Found on trees in the forests of Silhet, but seeming to prefer the mango trees to all others. Flowering time the dry season, probably the whole year round.

Stem as in our other Indian parasites, the size and shape very uncertain, but numerous from two to four-cleft; smooth branches and branchlets spread in all directions. *Leaves* opposite, short petioled, oblong, entire, smooth, from three to four inches long, and generally less than two in breadth. *Racemes* axillary, solitary, or in pairs, much shorter than the leaves. *Flowers* opposite, short-pedicelled, pretty large, of a greenish yellow colour. *Bractes* oval, one at the base of each pedicel, and two pressing the base of the germ, like an inferior bilabiate calyx. *Calyx* superior, entire, rotate. *Corol* regular; *tube* gibbous; *border* six-cleft; *divisions* revolute, somewhat spatulate. *Filaments* six, from the mouth of the tube of the corol, the length of its segments. *Anthers* ovate. *Germ* inferior, one-celled, containing one *ovula* attached to the top of the cell. *Style* longer than the corol. *Stigma* large. *Berry* inferior, long-oval, smooth, yellow, the size of a currant, one-celled. *Pulp* pale yellow, and very clammy. *Seed* solitary, ovate. *Integuments* two; the *exterior* one marked with six longitudinal fibres; the *inner* one membranaceous. *Perisperm* conform to the seed, six-grooved, green. *Embryo* cylindric, inverse. *Cotyledons* short, semicylindric. *Radicle* cylindric, with a turbinate apex, rising above the perisperm, inverse.

7. L. *clavatus. R.*

Leaves opposite, broad-lanceolate. *Flowers* axillary, few together, tetrandrous. *Corols* irregular, four-cleft; *berries* clavate.

A delicate, shrubby parasite, found in the Silhet district, growing on *Averrhoa Carambola.*

8. L. *pentapetalus. R.*

Leaves opposite, from lanceolate, to ovate-cordate, and obliquely alternate, smooth. *Racemes* axillary. *Flowers* pentandrous. *Petals* five, with an enlarged three-sided base.

A large, very ramous, shrubby plant, found growing on various trees in the forests of Silhet. *Flowers* red, appearing about the beginning of the rains in June.

Branches and *branchlets* columnar, and quite smooth. *Leaves* opposite, petioled, from lanceolate to ovate-cordate, obliquely alternate, from the middle to the apex, entire, smooth; from three to four inches long, and about two broad. *Racemes* axillary, solitary, or paired, straight, simple, often as long as the leaves, smooth. *Flowers* very numerous, short-pedicelled, smooth, scattered, red. *Bractes,* an obliquely-ovate one embraces the base of the germ on the outside. *Calyx* superior, rather small, sub-entire, smooth. *Petals* five, the base of each swelled out into a fleshy three-sided body, giving to the bottom of the corol, a globular form, and meeting in the centre, leaving only a small aperture for the style; above tongue-shaped, and recurved. *Filaments* five, inserted in the petals. *Anthers* ovate. *Germ* oblong, one-celled, containing one *ovula,* pendulous from the top of the cell. *Style* four-sided, jointed, or appearing so, near the middle. *Stigma* a little enlarged. *Berries* oblong, smooth, of a greenish yellow, one-seeded, &c. as in the genus.

BAMBUSA. Schreb. gen. n. 607.

Calyx calycled, from two to three-valved, many-flowered. *Corol,* glume two-valved. *Style* bifid. *Seed* one.

1. B. *arundinacea. Corom. pl.* 1. *N.* 79.

Spikes half verticelled; *calyces* about four-flowered, half of which are male ; *nectaries* three-leaved.

Arundo *bambos Linn. sp. pl.* 120.

Ily, Rheed. Mal. 1. *t.* 16.

Beng. Bans.

Teling. Mulkas, Vedroo.

Tam. Mungil, vel Munkil.

It delights in a rich, moist soil, such as the banks of rivulets, lakes, &c. among the mountains.

Stems, I fear to call them culms, numerous, from ten to a hundred from the same root, for eighteen or twenty feet straight, then bending gently to one side, pipped, jointed, undivided, but with innumerable, very ramous, alternate, winding, bifarious, spreading branches. *Thorns* double, or triple, alternate, on the joints of the *branches* and *branchlets ;* when double, a branchlet occupies the centre ; when triple the largest thorn stands there ; they are remarkably strong, sharp, and somewhat recurved ; sometimes they are wanting, particularly in rich moist soils. *Leaves* sheathing, bifarious short-petioled, linear-lanceolate, the upper side and margins backwardly hispid, broad at the base, fine-pointed, from two to six inches long, and half or three quarters of an inch broad ; on the rich moist soil on the banks of the Ganges they are from two to four inches broad, and about a foot long. *Sheaths* somewhat downy with a few short, bent filaments on each side of the mouth.

Inflorescence. When in flower the tree is generally destitute of leaves, and as the extremity of every ramification is covered with flowers, the whole tree seems one entire, immense panicle, composed of innumerable, somewhat verticelled spikes, each verticil is composed of several, distichous, oblong, pointed, sessile, rigid spikelets, such as those of ELEUSINE, *Poa, &c.*

Common *calyx*, calycled, from two to six-flowered,

from two to three-valved, *valvelets* equal, oblong, concave, smooth, and of a firm texture; *scales* round the base small, oval, number uncertain; they are also often common to several minute, sterile spikelets.

HERMAPHRODITE *flowers* one, two, or three below the male. *Calyx* no other than that above described. *Corol* two-valved, the exterior valvelet rather the shortest, oblong, pointed, smooth, cartilaginous; the *inner* valvelet oblong, margins inflected, concave behind, and fringed with hairs round the elevated margins of the posterior concavity. *Nectary* three obovate scales embracing the insertions of the stamens, and germ. *Filaments* six, inserted in the base of the germ. *Anthers* linear, incumbent. *Germ* oval. *Style* single. *Stigma* two-cleft; *divisions* plumose. *Seed* firmly closed in the corol, exceedingly like oats and about the same size.

MALE FLOWERS from one to three above the hermaphrodite. *Pistil* none.

It would be needless, and unnecessary to mention the various purposes to which this most useful plant is put; they are already known to most people.

The Tamul Doctors say the root is diluent; that the bark cures eruptions; the Camphire, or salt *(Tabaseer)* cures all sorts of paralytic complaints, flatulencies, and poisons. The leaves are esteemed the best Emmenagogue; the Chinese are said to possess the same idea. The seed is used for food as rice.

Tabasheer Vedroo Paloo, that is milk of bamboo, of the *Telingas*; and Mungle *Upoo*, salt of bamboo, of the Tamuls, the substance so well described by Dr. Patrick Russell, in *the 80th vol.* of the *Philosophical Transactions* of London, is found in the cavities of the joints of this sort.

2. B. *stricta. Corom. pl.* 1. *N.* 80.

Spikes with dense globular verticels. *Calyces* from two to three-flowered, all hermaphrodite; no nectary; exterior glumes of the corols daggered.

Teling. Sadanapa vedroo.

This is clearly a distinct species; it grows in a drier situation, is not near so large, has a much smaller cavity, and is very straight; its great strength, solidity, and straightness renders it much fitter for a variety of uses, than the common sort; the natives make staffs to their spears, &c. of it.

Stems fewer, straighter, and smaller, than in the common sort, otherwise they are the same. *Thorns* oftener wanting. *Inflorescence* the same as in the former. *Verticels* sessile, globular, very dense, entirely surrounding the branchlets. *Spikelets* of the verticel, crowded, distichous, &c. as in the last. *Calyx* as in the last, except that the scales are longer, and common to two or three spikelets. Here the flowers are generally all hermaphrodite, and seldom more than three to the calyx. *Corol* two-valved; *exterior* valvelet downy, with a very stiff, sharp, daggered point. *Inner* valve as in *B. arundinacea*. *Nectary* I could not see any. *Stamens* six. *Pistil* woolly. *Stigma* two-cleft, filiform. *Seed* as in the last.

3. B. *Tulda. R.*

Arboreous, unarmed. *Spikelets* about five-flowered, all hermaphrodite. *Nectaries* cuneate, fringed. *Style* three-cleft.

Vansa is the Sanscrit name which Sir William Jones applies to bamboos in general.

Beng. Tulda Bans.

Hind. Peka-Bans.

This is the common bamboo of Bengal, where it grows in the greatest abundance every where. Flowering time the month of May.

The *root* consists of many small fibres, spreading in every direction, but to no great distance, nor do they penetrate very deep.

The roots of all the other species are similar.

Stems in old plants numerous from the same root, jointed, smooth, and ramous. In the month of June, soon after the first rains set in, new ones rise up amongst those of the former year and in the same manner in all the other species, at first in the form of a large straight *elephant's tusk*, invested in strong coriaceous sheaths, one at each joint; these shoots rise simple to their full size, from twenty to seventy feet in height, and from six to twelve inches in circumference, in the course of about thirty days; during which period the sheaths drop off, and are soon succeeded by numerous, alternate, ramous, bifarious, unarmed branches, from the joints; before these appear, the shoots look like as many naked fishing rods, of immense size. *Leaves* alternate, bifarious, subsessile, sheathing, linear-lanceolate, acute-pointed, with their bases broad, and often rounded, or cordate; from six to twelve inches long, and about one broad. *Sheaths* of the leaves longer than the joints, and ending in two, lateral, stipulary, bearded processes.

Inflorescence. Before these trees blossom, they must be of considerable age, several years; and even then it is seldom they can be found in this state; at that period the whole plant is destitute of leaves, and forms one immensely, oblong, waving panicle, composed of innumerable, supra-decompound ramifications.

Spikelets lanceolate, sessile, one, two, three, or more at the joints of the most extreme ramifications; each bearing from four to eight, (generally all) hermaphrodite flowers. *Calyx* calycled, as in the other species described by me. *Corol* two-valved. *Exterior valve* oblong, pointed, smooth, completely involving the inner valve, as well as a portion of the flat rachis in which it is in-

serted. *Inner valve* concave on the inside, where it presses on the rachis; this concave portion is surrounded with a sharp ciliate margin. *Nectary* of three, broad, cuneate, ciliate leaflets. *Filaments* six, half the length of the valves of the corol. *Anthers* linear, drooping, red-purple. *Germ* obovate, obtusely three-sided. *Style* very short. *Stigma* three, long, feathering. *Seed*, they may best be described by comparing them to oats, which they exactly resemble, and are of the same size.

This species is very generally used all over Bengal, for covering the houses of the natives, scaffolding, &c. &c. If soaked in water for some weeks previously to their being used, they last much longer, and are stronger; if not they are soon devoured by a small species of Bostrichus. It is notwithstanding deemed inferior to *Balkooa (Balkoo bans)* of the Bengalees.

This species, *Tulda bans*, so far as I am able to judge at present, is not to be found on the Coast of Coromandel. Its quick growth, size and universal commonness in Bengal, renders it one of the most variously useful plants in India. The young thick shoots, mentioned when describing the stem, are when about two feet high, tender and very frequently pickled, and a most excellent one they make, when properly prepared.

Jowa Bans of the Bengalees, is only a large variety of this species, and used chiefly for scaffolding, and building the larger and better sorts of houses of the natives. It differs from Tulda in the greater length, and greater thickness of the joints. *Basini bans* of the Bengalees, is another variety of Tulda. It has a larger cavity, and is used chiefly to make baskets.

Behoor bans of the Bengalees, is of a small size, very solid, and strong, much bent to one side, and armed with numerous strong thorns, which renders it very fit for hedges. A staff of this species must be placed in the hand of every young brahmin, when invested with the sacerdo-

tal cord, otherwise they say the ceremony cannot be performed.

4. B. *Balcooa. R.*

Arboreous, unarmed. *Leaves* sublanceolate; with a cordate base, inflorescence sub-radical, *spikelets* from four to five-flowered, all hermaphrodite.

Beng. Balkoo-bans.

It is a native of Bengal, and on account of its size, and strength, is reckoned by the workers in bamboo work the very best sort for building the houses of the natives, scaffolding, &c. works requiring both size and strength. Flowering time the rainy season, however it rarely arrives at this state, for I have but once met with it in blossom.

Stems similar to the other species, but stouter, and often taller. *Ramifications* also the same. *Leaves* bifarious, subsessile on their sheathing bases, lanceolate, with the base cordate; *margins* slightly hispid; smooth, deep green on both sides; from one to two inches broad, and from four to twelve long. *Sheaths* longer than the joints; exposed parts villous, with a bearded stipulary mouth, (ligula,) rising above the insertion of the leaves. *Inflorescence* in radical, verticelled spikes; *verticels* large, sub-globular, composed of numerous, sessile spikelets, of from four to six hermaphrodite flowers. *Calyx* calycled. *Corol* two-valved. *Exterior* smooth, ovate. *Inner* with the exterior margins ciliate. *Nectary* of three, oval, ciliate leaflets. *Stamina* six. *Style* woolly. *Stigmas* three, and also woolly.

To make this species more serviceable, long immersion in water is required to render them firmer, and proof against the attacks of the Bostrichi, and their larvæ.

There are two varieties of this most useful species. The large the natives call *Dhooli-balkoo*, and the smaller *Balkoo-bans*, which has a smaller cavity, and though not so large a bamboo, is on that account very strong.

5. B. *baccifera. R.*

Arboreous, unarmed. *Pericarp* a very large, pendulous pyramidal, one-seeded berry.

Beesha. *Rheed. Mal. vol.* 5. *t.* 60. *p.* 119.

Pagu-tullu, of the people of the Chittagong mountains, where the plant is indigenous.

This uncommonly curious berry-bearing bamboo, is a native of the Chittagong mountains.

Growing plants, seeds, and well preserved specimens, were sent me from thence, by Mr. Richard Pierard, a gentleman to whom the Botanic Garden at Calcutta is under many obligations. The bamboo he writes is the one in common use in that country, for every purpose of building, &c. His description of the tree is so full and perfect that I do not think I can do better than transcribe what he says, in reply to my queries regarding this plant, viz.

"It bears no thorns; grows in dry places, chiefly on the sides of hills, where the upper stratum of the soil is sandy. The circumference near the base twelve or thirteen inches; height from fifty to seventy feet, beautifully erect, and without the least flexure, or unequality of surface, bare of branches except near the extremity. Perishes after yielding its fruit.

"It yields more or less *Tabasheer* of a siliceous crystallization; sometimes it is said the cavity between the joints is nearly filled with this, which the people call *choona, lime.*" So far Mr. Pierard.

Leaves alternate, bifarious, subsessile on their sheathing base, ovate-lanceolate, smooth on both sides, and slightly ribbed underneath; from six to twelve inches long, and from two to four broad. *Sheaths* of the leaves villous, with their mouths bearded with many long filiform fibres. *Spikes* compound, issuing many together from the joints of the large branches, or upper part of the stem, long, slender, jointed, ramous, each joint furnished with a sheath of nearly its length. *Spikelets* three, four.

or more flowered. The inferior scales *(Calyx,)* thereof abortive, or with male flowers. *Corol* of two unequal, long, taper, acute-pointed, smooth valves. *Stamina* six, about as long as the pistil. *Germ* ovate. *Style* single. *Stigmas* three, filiform, woolly. *Pericarp.* In this singular species, it is a very large, hard, fleshy, conical, smooth taper, curved, pointed fruit, with a single, large, oval seed in each.

6. B. *spinosa. R.*

Subarboreous, dreadfully armed with simple, and compound spines. *Spikelets* from three to five-flowered; *florets* trigynous. *Nectary* three-leaved.

Beng. Behor Bans.

Arundarbor spinosa. *Rumph. Amb.* 4. 14. *t.* 2.

This beautiful, middling sized, very elegant species, I have only found in the vicinity of Calcutta, where now and then some of the oldest are found to blossom about the beginning of the rains, in June.

Stems scarcely fistulous, jointed, &c. as in the other species; in this many grow so close together, as to appear a single trunk at some distance, and by the help of their bifariously alternate, triple branches, and spines, so completely bound together, that it is a most arduous task to cut down an old clump of them; *joints* from six to twelve inches asunder. The plants, or shoots of the clump, which come into flower, I have observed to be those of the centre, and they are taller, straighter, and with a much longer cavity, and longer joints than the rest, which are shorter, droop more, and wave elegantly with the motion of the wind, notwithstanding they are nearly solid, for it is only the larger stems that have a small cavity, the branches being generally solid; whole height from thirty to fifty feet. *Spines* at the joints, and very generally present, through the whole plant triple; this is evidently the habit, though frequently incomplete; the

middle one is the largest, and often compound; all are more or less recurved, very strong, and sharp. By the number and strength of these spines, and of the branches of this species, it may be said to form the most impenetrable jungle in India. *Leaves* sessile on their sheaths, bifarious, linear-lanceolate, cuspidate, rarely more than six inches long. The *sheaths* have their mouths ciliate with hairs and filaments.

Inflorescence. The plants of the clump when in flower, form one immense, naked panicle; for at this time there is not a leaf to be found on them. *Spikelets* crowded on the joints of the extreme branchlets, sessile, lanceolate, generally three, four, five or six-flowered, &c. exactly as in Poa. *Florets* the inferior two and terminal one male *hermaphrodite*, or neuter, the middle two, or three, or four *hermaphrodite*. *Calyx*, the number of scales which embrace the base of each spikelet uncertain. *Corol; glume*, two-valved; *exterior* smooth, hard, and pointed; *inner* as long as the exterior, concave behind; *margins* incurved, forming one acute angle, as in *Poa;* edges of the posterior concavity much ciliate. *Nectary* of three, corol-like, oval, ciliate scales. *Filaments* six, three immediately within the nectarial scale, and three alternate with them. *Germ* clavate. *Styles* three, entirely clothed with pale purple wool.

Like the other species, this is employed for various useful purposes; and as it grows to a pretty large size, and with a smaller cavity than any of the others, it is strong, and well adapted for a variety of uses.

7. B. *nana. R.*

Shrubby, unarmed.

Sans. Keu-fa, of the Chinese; a native of their country, and now plentiful in the Botanic Garden at Calcutta, but has not yet blossomed in Bengal. It makes most beautiful close hedges.

The popular belief, that *Bamboos* often take fire by the violence of their friction, during those hot, dry months, when, what is called, the land wind prevails, is supported by the Sanscrit stanza, quoted by Sir William Jones, (*See As. Res. vol.* 4. *p.* 254,) of which the following is a copy.

"Delight of the world, beloved Chandana, stay no longer in this forest which is overspread with rigid pernicious Vansas, whose hearts are unsound; who being themselves confounded in the scorching stream of flames, kindled by their mutual attrition, will consume not their own families merely, but this whole world."

HEXANDRIA DIGYNIA.

ORYZA. Schreb. gen. n. 609.

Calyx, glume two-valved, one-flowered. *Corol* two-valved, growing to the seed. *Nectary* two-leaved.

Of this genus I have found only two species, but of the first, sativa, there are between forty and fifty varieties known to, and cultivated by the Indian farmers; they seem all to have sprung from the wild sort called Newaree by the Telingas, and from it the following description is taken.

O. *sativa.* Willd.* 2. 247. *&c. &c.*

Panicle diffuse.

Unoo, Dhanya, Vrihi, the Sanscrit names of the cultivated sort, and *Nivara* the wild variety, called by the Telingas Newaree, Aruz of the Arabians.

* An improper name, certainly for the original wild plant which is never cultivated; however as custom has established it for the numerous varieties thereof, I cannot well attempt to alter it in describing what I take fór the original, wild stock, from whence all the cultivated varieties have sprung, which I am now describing.

Dhan the Bengalee name of the plant, and the unhusked rice, and Chaul the clean rice.

Uri the generic Telinga name of the cultivated sorts. Urloo the grain in the husk; and Bium the grain, or rice. Newaree of the Telingas is the plant in its wild state.

This original stock is always found wild in and about the borders of lakes throughout the Circars, is never cultivated so far as I can learn, because the produce, they say, is small, compared to that of the varieties in cultivation.

Root fibrous, annual. *Culms* numerous, near the base floating, or creeping, with the extremities erect, they are jointed, round and smooth, from two to eight or ten feet long, according to the depth of the water. *Leaves* sheathing, long, and slender, backwardly scabrous; *mouth* of the sheaths crowned with a large, conical, membranaceous, lacerated process. This process, ligula, or stipule, is common to all the varieties I have examined. *Panicle* terminal, thin, bowing when the seed is weighty. *Rachis* common, and partial, angular, and hispid. *Flowers* single, pedicelled. *Calyx* and *corol* as described in the *Genera plantarum*, except that here the large valve of the calyx ends in a very long hispid, coloured awn. *Nectary*, two falcate bodies embracing the posterior half of the germ which are common to all the varieties. *Stamens* six.

The rice of the wild sort above described, is remarkably white, palatable, and reckoned very wholesome; so that it is carefully gathered, and sells dear. The rich esteem it a dainty; and to make it still more delicate, they boil it only in steam. A coarse kind of confection, called *beat rice*, is made of it, and sold in most bazars.

Adepts in agriculture in England and Scotland say there is no such thing in nature as perpetual fertility,

they probably do not know that much of the rice land in Asia is so situated as to receive no help whatever from nature, except what the air and rains yield; however the greatest proportion, and the best, are those that are overflowed annually by the inundations of large rivers. These we know receive from the waters much fertilizing matter; but the greatest part of the rice lands in the Circars, are of the former sort; there they depend entirely upon the rains; consequently can receive no help but from the rain that immediately falls upon them, and the dry stubble that is annually left on the ground, together with the remains of a few other plants that may have grown up with the rice. The crop is always allowed to be in every part dry ripe before cut, and is then immediately carried off the field. Cattle are turned to eat up the stubble through the day, but never suffered to remain on it all night, as they are then constantly housed. I speak of those parts the Circars only which are near Samulcota; they cannot therefore communicate much fertility to the ground, and I never saw, nor heard of an east Indian farmer, manuring, in the smallest degree a rice field; yet these fields have, for probably thousands of years, continued to yield annually a large crop of rice, on an average from thirty to sixty-fold; even eighty, or a hundred has been known.

There is no rotation of crops on rice lands, they lie idle from the time one crop is cut till the next is transplanted into them, during which time the soil is most perfectly dried, I may say burnt up; whether it receives any benefit from being so, is a point on which I cannot pretend to give an opinion.

The best rice lands are extensive open plains, through which large rivers pass, and which are exposed to every wind that blows. No hedge, nor any kind of shelter is here necessary, so that the plants are exposed to the greatest glare of solar light, and the freest circulation of

air. The soil is generally of great depth, many feet pure mould without the least mixture of sand, small stones, &c. It is of a darker colour than garden mould in general. During the dry hot seasons these fields retain the water long upon the surface, allowing but little to escape through, so that most of the waste is by immediate evaporation.

The Hindoo farmers divide the numerous varieties into two orders; the first they call the *Poonas*, or the early sorts; the second the *Pedda*, and Worloo, or *Pedda Panta*, which means the late or great crop.

Division First.

Teling. Poonas. *Sungskrit*, Asoo. *Beng.* Aus.

The varieties of this order are generally, if the weather admits, sown thick in June, or early in July, on such small well laboured spots as are a little above the level of the common rice lands, for fear of their being too long inundated by heavy rains; at the same time it is necessary that those spots should be so situated, as to admit of being watered, in case of too dry weather. In about forty days, if the season has been favorable, the young plants will have attained to the height of from nine to eighteen inches; by this time fields are flooded, slightly ploughed, and made level by dragging by a pair of bullocks, or buffaloes, a long flat piece of wood. The fields being now in the state of very soft mud; the plants are taken up and transplanted by the hand. It is astonishing to see how soon a few labourers, men, women, and children, will plant a field, nothing more is now requisite to bring the crop to maturity, than keeping the fields constantly wet, more or less flooded, according to the sort of rice upon it, for some sorts require very little water, while others require a great deal. When nearly ripe, the water is drained off some days before they cut down the grain,

which is done with the sickle, as in most parts of Europe. The produce is then carried to some neighbouring elevated spot, where it is stacked, or immediately trod out by cattle. The grain is then winnowed, dried, and deposited in pits dug in high ground, and lined with the rice straw. The straw is stacked by the careful farmer, and reserved to feed his cattle with, during the hot months when all vegetation is burnt up.

The following eight sorts are amongst the most common of this division; and those I am best acquainted with, viz.

1st. *Jillama-waree*, is the Telinga name of the plant, and *Jilla-maloo* the ripe grain. This seems the first removed from the wild sort, *newaree*; the awn is shorter, and there are many of the flowers female. The rice is of a dark colour, and when husked, coarse, and reddish.

2nd. *Yerra-dal-waree* the plant, and *Yerro-daloo* the grain.

This sort has also a long awn, there are many male, neuter and female flowers mixed with the hermaphrodite ones. It requires less water than most other varieties, of course the higher situations suits it best, particularly if the season is very wet. The grain is white, but the husked rice is coarse and reddish; hence the name yerra, which means red.

3rd. *Dal-waree*, and *Dal-waloo* the grain. This sort has also a long awn. It is chiefly cultivated during the dry season, on such spots as can then be watered; both the grain, and husked rice are of a dark blackish brown colour, and it is reckoned a very coarse sort.

4th. *Satica-waree* the plant, and *Saticaloo* the grain. This produces a coarse brown grain, the husked rice of which is coarse, and reddish. It has a long awn, and is not much cultivated.

5th. *Tella-koadama*, the plant, the grain is white, but the husked rice is coarse and reddish; it has no awn. This

sort is generally sown broad-cast, where it is to grow; it requires little water, and of course is most cultivated on the higher lands that cannot command constant and regular supplies of water.

6th. *Suma-waree* the plant, and *Sumaloo* the grain. This is a small grain, of a dark colour, but the husked rice is white, and tolerably fine. It yields but a small produce, and is not much cultivated. It has no awn.

7th. *Kartee-waree* the plant, and *Kartikaloo* the grain. This sort is much cultivated, to a greater extent than all the other early sorts put together. It has no awn, the grain is of a middling size, brownish coloured; the rice when husked for the table is tolerably fine and white. It does not require a great deal of water.

8th. *Gouree-waree* the plant, and *Gowree-kunkaloo* the grain. This is the finest of the early sorts, the grain has no awn, and is of a pale purplish colour, and the husked rice is fine and white.

There are many other sorts belonging to this division, but as I have not had an opportunity of examining them, I say nothing further about them.

Division Second, or Pedda Worloo.

1st. *Atagadal-waree* the plant and *Ata-gadaloo* the grain; of this sort a large proportion is cultivated, probably as much as of all the other sorts put together. It is without awn, the unhusked and husked rice are both white, and of an excellent quality; it requires much water.

2nd. *Yerra-suna-waree* the plant, and *Yerra Sunaloo* the grain. The unhusked and prepared rice is white, and of a very superior quality, no arista, grain long and slender.

3rd. *Kosa-waree* the plant, and *Kosarloo*. the grain. The grain is of a light yellowish brown colour, small, awnless, and the cleansed rice, white, and tolerably fine; it requires but little water, and is little cultivated.

5th. *Aksuna-waree* the plant, and *Aksunaloo* the grain. Grain like the last, but the table rice is finer; a large proportion of this is cultivated.

6th. *Krishna-neel-waree* the plant, and *Krishna-neelaloo* the grain. The grain is awnless, very small, dark bluish-black colour. The prepared rice very fine, and white; it is not much cultivated.

This rice is generally boiled in steam, on account of its fineness. It is eaten by the rich only.

7th. *Bangar-tiga*, a large luxuriant sort. Grain white, and awnless; prepared rice white, and tolerably fine, it is much cultivated in the Vizagapatam district.

8th. *Kalee-ganda.* This is also a large luxuriant sort. The grain dark-coloured, awnless. The prepared rice tolerably white, but not fine; it requires but little water.

9th. *Telasuna-waree* the plant, and *Tella sunaloo* the grain. It is a large luxuriant variety. The grain white, awnless; the prepared rice white and fine. It is much cultivated.

There are besides the above, about twenty more varieties of this division, more or less fine, but the principal are those above-mentioned.

2. O. *coarctata. R.*

Panicle contracted; *valvelets* of the calyx subulate. *Leaves* culm-clasping.

A native of the Delta of the Ganges, and first discovered there by Dr. Buchanan in 1796. Flowering time the rainy season.

Root fibrous, and appears to be perennial. *Culms* erect, ramous, jointed, from two to four feet high, smooth, their lower parts seem also perennial. *Leaves* sword-shaped, broadest at the culm-clasping base, tapering to a very fine, long point, smooth, and of a firm texture, unequally divided by the nerve, which is visible on the back only, margins armed with minute prickles. *Sheaths* of the

leaves smooth, with ample, waved, fringed mouths, being a continuation of the leaves themselves. *Panicles* terminal, contracted, subcylindric. *Flowers* solitary, pedicelled. *Calyx* of two, minute, subulate valvelets. *Corol* two-valved, smooth; the exterior one boat shaped, and daggered.

I have not been able to learn that any use is made of this sort, nor even to obtain any Asiatic name for it:

LEERSIA. Soland.

Calyx; glume two-valved, one-flowered. *Corol* none.

1. L. *aristata. R.*

Leaves lanceolate. *Panicles* diverging. *Flowers* paired, exterior valve of the calyx awned.

Nir-valli-pullu. *Rheed. Mal.* 10. *t.* 12.

Beng. Junglee dal.

Found growing on the surface of deep, standing, sweet water, in the vicinity of Calcutta. Flowering time the cold season. Compare with *Pharus aristatus.*

Clums jointed, long, floating on, and in the water; emitting numerous roots from the joints; apices above the water sub-erect. *Sheaths* much longer than the joints, and about as long as the leaves. *Leaves* sheathing, sublanceolate, rather obtuse; cordate at the base; striated and clouded with dark brownish spots above, scabrous. *Panicles* thin. *Flowers* paired on pedicels of very unequal lengths, all hermaphrodite. *Calyx; glume* one-flowered, two-valved; *valvelets* long, hispid, about five-nerved the exterior ending in a pretty long straight arista. *Corol* none. *Nectary* two-leaved, obcordate, crenulate. *Stamens* six. *Germ* ovate. *Styles* two. *Stigmas* plumose.

2. L. *ciliata. R.*

Leaves linear-lanceolate, margins backwardly hispid.

Panicles oblong. *Flowers* solitary, valves of the calyx equal in length, and awnless, but amplyciliate on the back.

Pharus *ciliatus*. *Retz. obs.* 5. *p.* 23.

A native of Bengal, where it occupies with its primitive roots the margins of pools, lakes, &c. of sweet water, sending forth innumerable, several-fathoms-long, floating stems, and branches over the surface of the water, to a much greater extent than L. *aristata*, which grows in the same manner, but rarely extends more than a few feet. Cattle are fond of the former.

Compare with *Leersia hexandra* of *Swartz*, and *Leersia australis* Brown's Prodromus. In both the foregoing species I have never found the flowers completely hermaphrodite.

HEXANDRIA TRIGYNIA.

RUMEX. Schreb. gen. n. 613.

Calyx three-leaved. *Petals* three, converging. Three-seeded.

1. R. *acutus*. *Willd.* 2. 253.

Annual (in India.) *Flowers* hermaphrodite, valvelets all grain-bearing, at the flowering time entire, at the fruit time toothed; *verticels* approximate, with most numerous, pedicelled, drooping flowers. *Leaves* lanceolate, entire.

Hind. Jool-pallum.

Beng. Bun-palung.

This plant is common about Calcutta in low places, during the dry season, it perishes as soon as the first rains begin.

Root long, slender, somewhat ramous, annually of a pale yellowish brown colour. *Stem* erect, ramous,

furrowed, otherwise smooth; from one to three feet high. *Leaves* alternate, all petioled, lanceolate; the superior or floral leaves linear, and very smooth; all are entire, waved and smooth, from one to twelve inches long. *Petioles* with a trifling membranaceous vagina at the base; *verticels* numerous, approximate, consisting of numerous, drooping, pedicelled flowers. *Calyx; leaflets* linear, small. *Corol,* valvelets ovate-lanceolate, callous grained on the outside; at the flowering time they are entire, and as the seed advances to maturity become toothed on the sides, by which time the grains are very large, oblong-ovate, and with a granulous surface. *Style* short, filiform. *Stigmas* pencil-shaped.

Observation.

This differs from *R. acutus* of Europe in being annual, and I think it may be a different species. I must however leave it to those to point out wherein they differ, who have an opportunity of doing so with the living plants before them. Every part thereof possesses a considerable degree of astringency and bitterness, without any thing like acidity.

2. R. *vesicarius. Willd.* 2. 256.

Flowers hermaphrodite, geminate; all the valves very large, membranaceous, reflexed. *Leaves* undivided.

Sans. Shutavedhee.
Beng. Chooka-palung.
Arab. Humarbostanee.
Pers. Toorshumuk.

Found cultivated in gardens all over Asia, and used by the natives in their food, as well as medicinally.

APONOGETON. Schreb. gen. n. 835.

Calyx, or corol two-leaved. *Capsules* three or four, superior, each containing two, or more seeds.

1. A. *monostachyon*. *Willd.* 2. 917. *Corom. pl.* 1. *N.* 81.

Spike single, simple. *Leaves* linear, with cordate base. *Capsules* smooth, with about six seeds in each.

Parua-kelanga. *Rheed. Mal.* 11. *t.* 15.

Sans. Kakangi.

Hind. Ghechoo.

Nama is the Telinga name of the plant, and nama-dumpa of the root.

Saururus *natans*. Mant. 227.

It is a native of shallow, standing, sweet water; and appears, and flowers during the rains.

Root tuberous, perennial. *Leaves* radical, long-petioled, linear-oblong, at the base cordate, pointed, entire, smooth, from three to five-nerved, from three to six inches long, and about one broad. *Scapes* as long as the leaves, a little striated, perforated by many pores lengthways. *Spikes* elegantly bent this way and that, closely surrounded with flowers. *Calyx*, or *corol*, which you may please, two wedge-shaped, concave leaflets, or petals, inserted at the base of the two fissures, between the inferior and two superior germs, permanent. *Filaments* always six, shorter than the bractes, withering. *Anthers* blue. *Germs* constantly three, surrounded by the permanent stamens. *Capsules* three, pointed, with the remaining style, smooth, one-celled, from four to eight seeded. *Seeds* oblong, inserted into the base of the capsule.

The natives are fond of the roots, which are nearly as good as potatoes.

I have removed this genus from the fourth order of the seventh class, to the third order of the sixth, as all my four Indian species are uniformly hexandrous, and for the most part with three germs.

2. A. *echinatum*. *R.*

Spike single, and simple. *Leaves* linear, with cordate base. *Capsules* echinate. *Seeds* about six.

Found, with the former species growing in shallow fresh water all over the Circars.

3. A. *undulatum. R.*

Stoloniferous. *Spikes* simple. *Leaves* lanceolate, waved.

A native of Bengal, and like A. *monostachyon*, grows in standing sweet water. It flowers during the rains.

Root tuberous, perennial, stole-bearing and edible. *Leaves* radical, petioled, generally under, or floating on the water, lanceolate, waved, from three to five-nerved, with numerous, small, expanding veins, from four to six inches long, and less than one broad. *Petioles* compressed, shorter than the leaves. *Scapes* round, smooth, the length various, according to the depth of the water, thickening as it ascends. *Spikes* simple, crowded with flowers. *Bractes* and stamens as in A. *monostachyon*. *Germs* three, sometimes four, but this does not affect the number of stamens ; in all the flowers I examined, they are invariably six. *Capsules* smooth. *Seed* generally one or two, oblong.

4. A. *microphyllum. R.*

Root tuberous. *Spike* single, simple. *Leaves* radical, cylindric, many times shorter than the spike. *Capsules* with one or two seeds.

A native of damp places near the Bhotan mountains. Flowering time, the rainy season.

Root tuberous, and esculent. *Leaves* radical, sessile, about three, four, or five to the scape, spreading close on the surface of the earth, sub-semicylindric, their margins being incurved ; about one inch long, and one-eighth of an inch broad. *Scape* erect, round, smooth, three or four times longer than the leaves. *Spathe* caducous. *Spike* terminal, suberect, every where covered with beautiful blue coloured flowers. *Calyx* (*bractes* or *corol*) two-leav-

ed ; *leaflets* wedge-shaped, expanding. *Stamens* uniformly six. *Germs* three. *Capsules* with one, or two round seeds in each.

ANDERSONIA. R.

Calyx three-five-parted. *Corol* petalled. *Nectary* globular, with the sessile anthers affixed to its inside. *Germ* superior, three-celled ; cells two-seeded; attachment interior. *Capsules* three-celled, three-valved. *Seeds* solitary, arilled. *Embryo* inverse, without perisperm.

It was named in memory of the late Dr. James Anderson, Physician at Madras. It differs from Cupania in having a three-petalled corol, and globular antheriferous nectary ; and from *Guarea and Persoonia* in the *calyx* and *pericarpium.*

1. A. *cucullata. R.*

Polygamous. *Leaves* unequally pinnate; *leaflets* opposite, from two to four pair, obtuse. Hermaphrodite peduncles axillary, few flowered, male panicled.

Beng. Umur.

A tree of considerable size, but of very slow growth, a native of the Delta of the Ganges. Flowering time, the latter part of the rainy season, and the beginning of the cold season.

Trunk in young trees straight, with few *branches ;* the bark ash-coloured, and smooth ; *young shoots* also smooth. *Leaves* alternate, unequally pinnate, from six to eighteen inches long. *Leaflets* opposite, two, three, or four pair, short-petiolated, obliquely ovate-lanceolate, obtuse, unequally divided by the nerve, polished on both sides, and of a firm texture ; *margins* entire, from three to six inches long. The terminal leaflet is often cowled at the base, hence the specific name. *Petioles* nearly round, and pretty smooth. *Stipules* none.

Male tree. *Panicles* axillary, solitary, drooping, about

as long as the leaves ; ramifications numerous, diverging. *Flowers* numerous, small, yellow. *Bractes* a small obscure scale, under each division of the panicle, and two pressing the calyx laterally. *Calyx* small, one-leaved, three-toothed. The two bractes, while they remain, make it appear five-parted. *Petals* three, oval, concave, pressed to the nectary. *Nectary* round, turbinate, with a contracted triangular opening on the apex. *Filaments* none. *Anthers* from six to eight, sessile, round the inside of the nectary, apparently abortive. *Germ* none, but a clavate gland in its place.

HERMAPHRODITE tree. *Peduncles* axillary, solitary from three to six-flowered. *Flowers* longer than the male, in other respects the same. *Calyx, corol,* and *nectary* as in the male. *Anthers* always six. *Germ* superior, three-sided, ovate, covered with minute, stellate scales, three-celled, with two vertically placed *ovula* in each, attached to the middle of the axis. *Style* none. *Stigma* large, three-lobed ; *lobes* somewhat two-lobed. *Capsule* nearly round, as large as a middling sized apple, three-lobed, three-celled, three-valved. *Cortex* thick, firm, and of a tough, fleshy texture. *Seeds* solitary, of a roundish trigonal shape, three-fourths covered with a fleshy bright orange-coloured aril. *Integument* under the aril smooth, and of a chesnut colour. *Perisperm* none. *Embryo* inverse. *Cotyledons* conform to the seed. *Plumula* two-lobed. *Radicle* semilunar, superior.

2. A. *Rohituka. R.*

Polygamous. *Leaves* unequally pinnate ; *leaflets* six-paired, obliquely oblong, entire, smooth, opposite. *Inflorescence* axillary, the fertile flowers spiked, the abortive ones panicled.

Sans. Rohituka.

Beng. Tikta-raj.

Hind. Harrin-hara, or khana.

These synonyms refer chiefly to the *female hermaphrodite*, or fertile tree.

A small tree, a native of Bengal. Flowering time the rainy season.

Trunk pretty straight, covered with smooth, ash-coloured bark. *Branches* not very numerous, but spreading and drooping much, and so densely decorated with leaves, as to yield the most complete shade. *Leaves* alternate, unequally pinnate, from one, to two feet long. *Leaflets* from four, to eight pair, opposite, short-petioled, oblong, and linear-oblong, somewhat falcate, entire, obtusely cuspidate, smooth on both sides; the most exterior are about six inches long, while the lower pair is scarcely half the length. *Petioles* nearly round, and very slightly villous. *Stipules* none.

MALE tree. *Panicles* axillary, or rather a little above, shorter than the leaves, composed of numerous, simple, diverging, somewhat drooping ramifications. *Flowers* numerous, subsessile, small, white, inodorous. *Bractes* minute, scales under the divisions of the panicle, and calyx. *Calyx* one-leaved, thick, firm and fleshy. *Border* divided into five nearly equal, imbricate, reniform segments. *Petals* three, oval, concave. *Nectary* globular, pure white, fleshy, smooth, with a roundish triangular opening on the apex. *Filaments* none. *Anthers* six, their back attached to the inside of the nectary. *Germ* abortive.

HERMAPHRODITE tree. *Spikes* axillary, solitary, pedunculed, erect, generally simple, rather more than half the length of the leaves. *Flowers* sessile, numerous, small, cream-coloured. *Bractes*, a very minute one below each flower. *Calyx* five-leaved. *Leaflets* orbicular, unequal, leathery, concave, smooth on both sides. *Petals* three, roundish, concave, much longer than the calyx. *Nectary* globular, fleshy, perforated at the apex, occupying

the whole centre of the corol ; inclosing the stamens, and pistil. *Filaments* none, or very short. *Anthers* six, linear, pointed, joined to the inside of the nectary, with their apices just appearing at its perforation, which makes the nectary look as if its mouth was six-toothed. *Germ* three-celled, with two ovula in each, attached to the middle of the axis. *Style* scarcely any. *Stigma* three-lobed ; *lobes* emarginate. *Capsule* round, about an inch and a quarter in diameter, smooth, pale yellow, rather soft and fleshy, three-celled, three-valved, opening from the apex. *Seeds* solitary, oblong, enclosed in a complete, thick, fleshy, scarlet aril, which is attached length-ways to the three-partible mouth of the capsule, and this again to a light coloured mark on the *inner* edge of the seed, and round its apex. *Integuments* two ; *exterior* the colour, polish, and consistence of the chesnut ; the *inner* one lighter coloured, thin and firmly attached to the cotyledons. *Perisperm* none. *Embryo* inverse, minute, until vegetation has taken place. *Cotyledons* conform to the seed, and so firmly and completely united, as to seem one, until the two-lobed *plumula*, and superior radicle, are considerably advanced.

From the seeds of this species, the natives, where the trees grow plentifully, extract an oil, which they use for various economical purposes.

HEXANDRIA HEXAGYNIA.

DAMASONIUM. Schreb. gen. n. 624.

Spathe superior. *Perianth* superior, three-leaved. *Corol* three-petalled. *Germ* lanceolate, from six to twelve-celled ; *cells* many-seeded ; attachment septal. *Styles* equalling in number the cells of the germ. *Capsule* one-celled, six-valved. *Seeds* numerous. *Embryo* minute ; direction various ; perisperm ample.

1. D. *indicum. Willd.* 2. 276. *Corom. pl.* 2. *N.* 185.
Ottel-ambel. *Rheed. Mal.* 11. *t.* 46.
Beng. Parmi-kulla.
Teling. Neer-venekee.

An annual plant, a native of sweet water. Flowering time the rainy season.

Root fibrous. *Leaves* radical, petioled, from oblong-cordate to broad-cordate, waved, from seven to eleven-nerved, smooth, of a thin membranaceous texture; size very various, say six inches each way; they generally grow under the water. *Petioles* three-sided, length various. *Peduncles* radical, with the petioles, of sufficient length to raise the flower above the surface of the water, from four to five-sided, smooth, one-flowered. *Calyx*, spathe, superior, one-leaved, from five to six-winged; *wings* membranaceous, waved; mouth five or six-toothed. *Perianth* superior, three-leaved; *leaflets* lanceolate, three-nerved. *Corol* three-petalled. *Nectary* three small, obcordate scales within the insertion of the petals. *Filaments* from six to twelve, erect. *Anthers* linear, erect. *Germ* within the belly of the spathe and inferior to the perianth, from six to twelve-celled, each containing numerous ovula attached to the partitions, as in *Nymphea*. *Styles* from six to twelve, half two-cleft. *Stigmas* acute. *Capsule* oblong, crowned with the withered perianth, six-grooved; one-celled, six-valved. *Seeds* numerous, affixed to six sharp keels, (*parietal receptacles,*) running on the inside of the sutures of the six valves.

CLASS VII.

HEPTANDRIA MONOGYNIA.

PISONIA. Schreb. gen. n. 1603.

Calyx campanulate, five-toothed. *Corol* none. *Seed* solitary, involved in the enlarged, bacciform calyx. *Embryo* erect, embracing a central perisperm.

1. P. *aculeata. Willd.* 2. 283. *Gœrt. Sem.* 1. 367. *t.* 76.

Dioecous, shrubby, scandent. *Thorns* axillary, recurved. *Leaves* oblong. *Panicles* axillary.

Beng. Baghachura.

Tam. Karu-indu.

Tragularia *horrida*, of *Konig. M. S. S.*

Teling. Kunki-pootri.

A very common, strong, large, straggling shrub.

Trunk scarcely to be distinguished. *Bark* smooth, dark-olive-coloured. *Branches* numerous, nearly opposite, decussate, horizontal, extending far; young parts downy. *Thorns* axillary, solitary, recurved, very sharp, and strong. *Leaves* sub-opposite, petioled, oval, obtuse. a little downy. *Flowers* collected on small, rigid, terminal, and axillary panicles.

Male. *Calyx*, bell-shaped, five-toothed, five-angled, somewhat scabrous. *Corol* none. *Filaments* seven or eight, twice the length of the calyx, inserted into a fleshy receptacle, which surrounds the base of the abortive germ. *Anthers* simple. *Germ* lanceolate, abortive.

FEMALE. *Calyx* as in the male. *Corol* none. *Stamens* none. *Germ* superior, conical. *Style* longer than the calyx. *Stigma* headed. *Pericarp* none, the calyx now enlarged, and contracted at the mouths serves for one. It is five-sided, each angle being armed with two or three rows of conical, headed, very glutinous glands. *Seeds* one, nearly cylindric, &c. as described by Gærtner.

It makes most excellent,impenetrable fences, and when fairly caught in its trammels, it is no easy matter to be extricated, the prickles being so numerous, strong, crooked, and sharp. Both Konig and myself were so situated amongst the Vandalore hills near Madras, and hence he named it T. *horrida*, not at that time suspecting it to be *Pisonia aculeata*.

Plants received from the West Indies into the Botanic garden at Calcutta, do not in any respect differ from our East Indian one, which grows common in forests, hedges, &c.

JONESIA. R.

Calyx two-leaved. *Corol* infundibuliform, the tube fleshy and closed, border four-parted. *Nectary*, a staminiferous and pistiliferous ring crowning the mouth of the tube. *Germ* pedicelled. *Legume* turgid, from four to eight-seeded.

J. asoca, R. in Asiat. Res. 4. 355.

Leaflets five pair, lanceolate. *Flowers* heptandrous.

Jonesia *pinnata. Willd.* 2. 287.

Asoca. *Asiat. Res.* 3. 254. *and* 4. 274.

Asjogam. *Rheed. Mal.* 5. *p.* 117. *tab.* 59.

Beng. Usok.

Found in gardens about Calcutta, where it grows to be a very handsome, middling sized, ramous tree; flowering time the beginning of the hot season; the seeds ripen during the rains.

The plants and seeds were probably brought originally from the eastern frontier of Bengal, where it is indigenous.

Trunk erect, though not very straight. *Bark* dark brown, pretty smooth. *Branches* numerous, speading in every direction, so as to form a most elegant, large shady head. *Leaves* alternate, abruptly pinnate, sessile, generally more than a foot long ; when young, pendulous, and coloured. *Leaflets* opposite, from four to six-pair, the lower pairs broad-lanceolate ; the superior lanceolate ; all are smooth, shining, and of a firm texture, with their margins a little waved. Common *petioles*, round, smooth. *Stipules* axillary, solitary, in fact a process from the base of the common petiole, as in many of the grasses. *Cymes* terminal and axillary, between the stipule and branchlets, nearly globular, large, and crowded with flowers. *Bractes* a small, cordate, one under each division, and subdivision of the cyme. *Peduncles*, and *pedicels* smooth, and reddish-coloured. *Flowers* numerous, pretty large ; when they first expand, they are of a beautiful orange colour, gradually changing to red, forming a variety of beautiful shades, fragrant during the night. *Calyx* two-leaved ; *leaflets* nearly opposite, coloured, cordate, bracte-like, marking the termination of the pedicel, or the beginning of the tube of the corol. *Corol* one-petalled, funnel-formed. *Tube* slightly incurved, firm, and fleshy, tapering towards the base, and impervious. *Border* four-parted ; *divisions* spreading, suborbicular, one-third the length of the tube ; *margin* slightly woolly. *Nectary*, a staminiferous, and pistiliferous, crenulated ring crowning the mouth of the tube. *Filaments* generally seven, and seven must, I think, be the natural number ; viz. three on each side, and one below ; above a vacancy, as if the place of an eight filament, occupied on its inside by the pedicel of the germ ; the filaments are equal, distinct, ascending, and about three, or four times longer than the border of the corol. *An-*

thers reniform, small, incumbent. *Germ* oblong, pedicelled; *pedicel* inserted into the inside of the nectary, immediately below the vacant space already mentioned, one-celled, from eight to twelve-seeded, attached to the upper margin of the cell. *Style* nearly as long as the stamens, declining. *Stigma* simple. *Legume* scimitar-shaped, turgid, on the outside reticulated, otherwise pretty smooth, from six to ten inches long, and about two broad. *Seeds* generally from four to eight, smooth, gray, the size of a large chesnut.

Note. Many of the flowers have only the rudiment of a pistilium.

When this tree is in full blossom, I do not think the whole vegetable kingdom, affords a more beautiful object.

2. *J. scandens. R.*

Shrubby scandent, or twining. *Leaflets* two or three pairs.

A native of Sumatra, and has been received into the Botanic garden at Calcutta, but has not yet blossomed there. Sir William Jones, whose name this genus bears, mentions (*Asiat. Res.* 4. 275.) a twining species, to which Jayadeva gave the epithet voluble which is probably a fourth species, if not this.

3. *J. triandra. R.*

Leaflets two pair, oval. *Flowers* triandrous.

A native of the Malay Archipelago.

CLASS VIII.

OCTANDRIA MONOGYNIA.

XANTHOPHYLLUM. R.

Calyx five-leaved. *Corol* five-petalled, sub-papilionaceous. *Germ* superior, one-celled, few-seeded, attached to two opposite parietal receptacles. *Berry* one seeded. *Embryo* transverse, without perisperm.

1. X. *virens. R.*

Panicles interfoliaceous and terminal. *Germ* four-seeded.

Beng. Gundee.

A large timber tree, a native of the thick forests of Silhet, where it blossoms in March and the seed ripens in June and July. The wood is said to be remarkably hard and useful to the natives.

Branches and *branchlets* very numerous, and much crowded, smooth. *Leaves* alternate, short-petioled, from oblong to lanceolar, entire, of a firm texture, and polished; about six inches long, and from one and a half to two and half broad. *Stipules* none. *Panicles* terminal, and between the leaves, internodal, very numerous and pretty much crowded with flowers; in general they are shorter than the leaves, and every part is smooth. *Flowers* numerous, rather small, colour a mixture of yel-

low and pink, generally solitary, pretty long-pedicelled. *Bractes* tern, at the base of each solitary pedicel, small, ensiform, villous, caducous. *Calyx* five-leaved, rather unequal, the lower two, and the superior one being smaller. *Petals* five, the superior and lateral four nearly equal, sub-spatulate, falcate; the upper two from what may be called the vexillum; the fifth or lower, (*carina*,) boat-shaped, unguiculate, and pink-coloured. *Filaments* eight, incurved, nearly equal, shorter than the corol, and hairy; four of them inserted on the claws of the upper four petals, two on the claw of the lower, viz. the carina, and the remaining two into the receptacle, between the two petals which form the *vexillum* and the two *wings*. *Anthers* oval. *Germ* superior, short-pedicelled, the insertion of which is embraced by a seven-angled, nectarial cup, round, ribbed, a little hairy, one-celled, containing four *ovula*, attached two and two to two opposite sub-parietal receptacles, near the base of the cell. *Style* the length of the stamina, toward the apex incurved. *Stigma* slightly two-lobed. *Berry* globular, short-pedicelled, of a firm fleshy texture, when ripe, olive-coloured, and about the size of a pigeon's egg, one-celled. *Seed* solitary, nearly round; *attachment* lateral. *Integument* single, rather thick and brownish. *Perisperm* none. *Embryo* transverse, green. *Cotyledons* two, conform to the seed, equal. *Radicle* lateral, truncate, lodged immediately within the umbilicus of the seed, and pointing to it.

2. X. *flavescens. R.*

Panicles axillary and terminal. *Germs* from eight to ten-seeded. Two glands on the back of the leaves near the base.

Beng. Ajensak.

A large tree, a native of the hilly parts of the province of Chittagong, where it blossoms in May, and is so ve-

ry much like the former species, *virens*, that I was for some time inclined to consider them only varieties of one species, but attentive examinations made at various times, give me reason to think they are sufficiently distinct. In the former, *virens*, the leaves continue green when dry, and are destitute of the two small, hollow glands on the base of the lower pair of veins, one on each of the lower ends of the rib, or nerve, which particularly mark *flavescens*. The *panicles* except those that terminate the twigs, are in this perfectly axillary; in that far above the axills, and their insertions accompanied by two or three, vertically situated *knobs* or buds, as in some species of *Capparis*, &c. There the *germ* has never more than four *ovula*, inserted by pairs on opposite sides near the bottom of the cell; here are from eight to twelve *ovula* in the germ, inserted on opposite sides of the cell, from the base to near the top. There the stigma is large and more or less two-lobed; here simple. In other respects they agree so well, that it seems unnecessary to figure more of *flavescens*, than the back of the base of one leaf, to shew the two glands.

OSBECKIA. Schreb. gen. n. 635.

Calyx from four to five-cleft; *lobes* separated with a fringed scale. *Corol* from four to five-petalled. *Anthers* beaked. *Capsule* four-celled, girt with the tube of the calyx.

1. O. *zeylanica. Willd.* 2. 300.

Annual, bristly. *Leaves* petioled, oblong, bristly. *Flowers* axillary, and terminal.

A native of Ceylon.

Stem annual, erect, four-sided, the angles armed with erect bristles. *Branches* opposite, stem-like; whole height about one foot. *Leaves* opposite, short-petioled, oblong, entire, fringed, bristly on both sides. *Flowers* axillary,

and terminal; those of the axils solitary, and short-peduncled; the terminal from one to five, or seven together, and still shorter peduncled, a large, beautiful bright blue-purple. *Bractes* fringed. *Calyx* bristly; intermediate scales consisting of a pedicelled star of bristles each.

2. O. *chinensis*. *Willd.* 2. 360.

Annual, erect, four-seeded, scabrous. *Leaves* sessile, lanceolate, three-nerved. *Flowers* terminal, subsessile, four smaller divisions of the calyx fringed.

Found in Cuttack, on dry rice fields, in flower during the cold season.

3. O. *tetrandra*. *R.*

Shrubby, scandent. *Leaves* opposite, three-nerved. *Panicle* terminal. *Flowers* tetrandrous.

A large, climbing shrub, a native of Pulo Pinang. Tendrils few, scattered, solitary, undivided.

Leaves opposite, short-petioled, three-nerved, cordate-oblong, entire, smooth on both sides; a marginal vein runs round the leaves, which gives them the appearance of being five-nerved. *Petioles* short, bristly on the upper side. *Panicles* terminal, cross-armed, conical; divisions thereof trichotomous. *Calyx* one-leaved. *Tube* gibbous, permanent. *Border* four-parted, deciduous. *Petals* four, alternate with the stamens, long-clawed, crescent-shaped, fringed, each having a long spur projecting downward from the inside. *Filaments* four, inserted into the calyx. *Anthers* erect; before expansion their points are lodged in four deep pits between the calyx and germ. with long perforated beaks and two small scales at the base of each on the inside. *Germ* hidden within the calyx. *Style* awled. *Stigma* simple. *Capsules* roundish, crowned with the entire tube of the calyx, four-celled; *cells* opening at top. *Seeds* very numerous. *Receptacle* semilunate.

Observation.

This plant appears to me to be nearly allied to *Osbeckia*, however the want of the intermediate small scales of the calyx, and their being only four stamens, are I think sufficient motives for doubt. Compare with *Melastoma*, also with *Rhexia*.

New genus (Blank.)

Calyx entire. *Corol* four-petalled, inserted on the calyx. *Capsule* inferior, four-celled; *receptacles* parietal. *Seeds* numerous.

Leaves opposite, short-petioled, ovate-oblong, entire, pointed, three-nerved, smooth on both sides. *Corymbs* terminal, and axillary, much shorter than the leaves, crowded, decompound. *Flowers* numerous, small. *Bractes* minute. *Calyx* entire. *Petals* four, contorted, ovate-cordate, subsessile, expanding, inserted in the mouth of the calyx. *Filaments* eight, the length of the petals, inserted into the calyx under the petals, points incurved and fine. *Anthers* crescent-shaped, with a double pollenifer-ous groove on the inside. *Germ* inferior, roundish, small. *Style* the length of the stamens. *Stigma* clavate. *Capsule* four-celled, four-valved, crowned with the remaining calyx. *Seeds* numerous, affixed to four, callous, vertical parietal receptacles, as in *Vallisneria*, &c.

COMBRETUM. Schreb. gen. n. 641.

Calyx superior, from four to five-toothed. *Corol* from four to five-petalled, inserted with the stamina into the mouth of the *calyx*. *Germ* one-celled; *ovula* from two to four; attachment superior. *Seeds* solitary, from four to five-winged, or lobed. *Embryo* inverse, without perisperm.

1. C. *ovalifolium. R.*

Scandent. *Leaves* opposite, oval, smooth, obtuse. *Spikes* axillary and terminal, the latter compound. *Calyx* subrotate. *Petals* elliptic.

A native of Coromandel. Flowering time in the Botanic Garden at Calcutta March and April. The *seeds* ripen during the rainy season.

Stem stout, and ligneous, soon dividing into numerous, woody, scandent branches and branchlets of great extent. *Bark* of the old parts rough, and brown; of the young shoots smooth. *Leaves* opposite, short-petioled, oval, entire, obtuse, smooth on both sides; from four to six inches long, and two to three broad. *Stipules* none. *Spikes* terminal and axillary; the former compound, having two, or three pairs of opposite, expanding branches, and may be called a panicle. *Bractes* minute, subulate, one-flowered. *Flowers* small, yellowish white, sessile. *Calyx* without a tube, concave within, and there the rim is surrounded with a large, orange-coloured, hairy ring; *border* four-parted; *segments* three, angular, reflexed. *Petals* elliptic, obtuse, longer than the segments of the calyx, smooth, white. *Filaments* longer than the petals, incurved, alternately somewhat shorter. *Germ* inferior, oblong, one-celled, containing two *ovula*, attached to the top of the cell. *Style* shorter than the stamina. *Stigma* simple. *Seed* narrow-lanceolar, four-winged; wings semilunar, smooth, membranaceous. *Integuments* two; interior thin, and brown. *Perisperm* none. *Embryo* inverse. *Cotyledons* intricately folded into the four lobes of the seed, when expanded two-lobed, as in most of the *Convolvulacea*. *Radicle* superior.

2. C. *rotundifolium. R.*

Scandent. *Leaves* opposite, petioled, nearly round, smooth, entire. *Racemes* axillary, solitary, cylindric,

dense. *Flowers* pedicelled; *calyx* narrow-campanulate; *petals* obcordate.

Cou-*luta* the vernacular name in Silhet, where it is indigenous. Flowering in January and February.

Stem and *branches* scandent; the young shoots often twining. *Leaves* opposite, or nearly so, petioled, subrotund, entire, smooth; from three to five inches long, and nearly as broad. *Petioles* about an inch long. *Racemes* axillary, solitary, long-peduncled, short, cylindric, crowded with numerous, small, straw-coloured, pedicelled flowers. *Bractes* subulate, one-flowered, caducous. *Calyx* narrow-campanulate, four-toothed. *Petals* four, obcordate, and about as long as the teeth of the calyx. *Filaments* eight, long and slender, just under the insertion of each is a hairy gland. *Germ* lanceolar, four-sided, one-celled, containing two *ovula* attached to the top of the cell.

3. C. *costatum. R.*

Scandent. *Leaves* opposite, oblong, smooth, veins single and parallel. *Spikes* axillary, single, or paired; *calyx* cup-shaped; *petals* lanceolar, minute.

Tali *jooniar* the vernacular name in Silhet, where it is indigenous, and like the other East India species, a large, scandent shrub. Flowering time March and April.

Branchlets opposite, or dichotomous, round, and smooth. *Leaves* opposite short-petioled, oblong, taper-pointed, entire, smooth on both sides; veins simple and parallel; about six inches long, and three broad. *Stipules* none. *Spikes* axillary, and terminal, single, or in pairs, subsessile, from one to two inches long. *Flowers* numerous, scattered, small, dull yellow. *Bractes* minute, one on the under side of each germ. *Calyx* cup-shaped, obscurely four-toothed, pretty smooth and even on both sides. *Petals* four, very small, lanceolar. *Fi-*

laments eight, smooth, many times longer than the calyx, and inserted into it. *Anthers* two-lobed. *Germ* inferior, one-celled, containing two, three, or four *ovula*, attached to the top of the cell. *Style* nearly as long as the stamina. *Stigma* acute.

4. C. *acuminatum. R.*

Scandent. *Leaves* opposite, and alternate, subsessile, ovate-lanceolate, acuminate, with a cordate base. *Spikes* axillary, and terminal. *Calyx* campanulate, a very hairy belt within. *Petals* subrotund.

Patj*ooni*, the vernacular name in Silhet, where it is found wild in the forests, running over trees, &c. to a great extent. Flowers in March and April; seed ripe in July.

Young shoots downy. *Leaves* subopposite, and alternate, subsessile, from oblong to ovate-lanceolate, entire; base cordate; *apex* alternate and acute; upper surface pretty smooth, villous underneath; from four to six inches long, and from one to three broad. *Spikes* axillary and terminal, peduncled, shorter than the leaves, villous. *Flowers* numerous, sessile, small, yellow. *Calyx* campanulate; *mouth* acutely four-toothed, round the inside just below the insertion of the filaments, is a very hairy, membranaceous ring, with the lower hairs thereof pointing down, while those above point up through the mouth of the tube, and are straw-coloured. This hairy valve, or membrane, will immediately point out this species. *Petals* four, round-oval, yellow. *Stamina* eight. *Germ* ovate, one-celled, containing three or four *ovula*, attached to the top of the cell. *Style* length of the stamina. *Stigma* simple. *Seed* oblong, four-cornered, the four sides grooved; angles thick and rounded, smooth, dark brown and dry. *Integuments* two, no perisperm. *Embryo* inverse, with the large *cotyledons* most intricately folded

as in the *Convolvulaceæ*, and not expanding, or rising above ground during vegetation.

5. C. *extensum. R.*

Shrubby, climbing and twining to a great extent. *Leaves* opposite, oblong, smooth, entire. *Spikes* lateral, often compound, short-peduncled, ovate. *Calyx* infundibuliform, smooth ; *divisions* acute. *Petals* truncated.

A most extensive, stout, woody, twining, and climbing plant, with smooth brown bark ; a native of the Malay Islands. From Amboyna it has been introduced into the Botanic Garden at Calcutta, where it blossoms in January and February ; seed ripe in April.

Leaves opposite, short-petioled, oblong, entire, firm and polished, about six inches long, and about three broad. *Spikes* lateral, and axillary ; the first from the former years branches, below the leaves, short-peduncled, often compound much shorter than the leaves, ovate, and closely covered with diverging, small, pale greenish white flowers, becoming reddish by age. *Bractes* most minute, one-flowered. *Calyx* funnel-shaped ; *border* of four, triangular, recurved, acute, divisions. *Petals* four, not half the length of the divisions of the calyx, ovate-truncate, but as the edges become revolute, they then appear acute. *Filaments* eight, inserted into the mouth of the calyx, and longer than the divisions of its border. *Anthers* roundish, orange-coloured. *Germ* inferior, linear-oblong, one-celled, containing two, three, or four seeds attached to the top of the cell. *Style* so long as to elevate the *stigma* even with the anthers. *Seed* always single, and with Gærtner, I consider the exterior integument thereof all there is for a *seed vessel*, which is of a lanceolate shape, with four grooves on the four sides, and the four angles extended into four, large, scariose, semilunar wings. *Inner integument* more spongy and entering into the four angular grooves formed by the fold-

ings of the lobes. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, oval, three-nerved, emarginate, plaited into each other. *Plumula* minute. *Radicle* clavate, superior, pointing directly to the convoluted cord, which attaches the inner integument to the outer, under the style.

6. C. *chinensis. R.*

Subarboreous, scandent. *Leaves* opposite, and tern, oblong, smooth. *Spikes* axillary, shorter than the leaves. *Tube* of the calyx clavate, mouth shut with hairs.

A very large, spreading, ramous, scandent plant, in the Botanic Garden at Calcutta ; originally from China.

Flowering time in Bengal the beginning of the cold season.

Trunk scarcely any, but numerous branches, spreading in every direction and climbing when supported, to the extent of some fathoms. *Bark* dark brown ; and pretty smooth. *Leaves* opposite, and tern, petioled, drooping, entire, oblong, polished on both sides ; about four inches long, and two broad. *Spikes* axillary, solitary, simple, erect, subcylindric, compact, scarcely half the length of the leaves, bearing sessile flowers on all sides. *Bractes* subulate, recurved. *Calyx*. *Tube*, clavate ; mouth shut with hairs ; *border* of four, acute segments. *Petals* obovate, acuminate, twice longer than the segments of the calyx. *Stamens* eight, a little longer than the petals. *Germ* sessile. *Style* nearly equalling the filaments. *Seed* with four large wings.

This is evidently different from C. *secundum* and *decandrum* but to distinguish it from *laxum*, requires that attention be paid to the three-fold leaves ; the form and length of the spikes, the size of the petals, and the length of the filaments. *Vide Jacquin. Stirp. Amer. p.* 103. 4-5.

7. C. *macrophyllum. R.*

Scandent, smooth. *Leaves* opposite, ovate. *Racemes* axillary, subcylindric, dense and crowded. *Calyx* infundibuliform. *Segments* acuminate. *Petals* oval.

A very extensive, powerful rambler, a native of Chittagong, where it blossoms in December. It is readily distinguished by the flowers being pedicelled, and while in the bud acutely conical, also within is a hairy rim round its mouth, below the eight stamina. The larger leaves are about a foot long, and from six to eight inches broad.

8. C. *squamosum. R.*

Scandent, all the tender parts covered with minute scales. *Leaves* opposite short-petioled, oblong, entire, acute. *Panicles* terminal, and axillary. *Petals* lanceolar.

A native of the Malay Archipelago.

9. C. *laxum. Willd.* 2. 319.

Scandent. *Leaves* oval. *Racemes* lengthened, thin of flowers and without bractes. *Calyx* woolly within.

Teling. Bandikota.

A native of the Northern Circars, but I doubt whether it be the same as the American species with the same specific name.

10. C. *pilosum. R.*

Scandent. *Leaves* opposite, ovate-lanceolate. *Panicles* uncommonly dense and hairy. *Flowers* hairy, decandrous. *Petals* lanceolar.

Beng. Jooni-ugur.

A native of the Silhet district, and like the other Indian species, an extensive, very permanent, large scandent species with the more slender branches twining. *Bark* of the ligneous parts pretty smooth, dark brown; that of

the younger shoots clothed with much ferruginous, soft pubescense.

Leaves opposite, subsessile, broad ovate-lanceolate, entire, nearly smooth, as scarcely any thing more than the nerve and veins on the underside are slightly pubescent; six or eight inches long, and from one to three broad. Floral leaves small, broader in proportion, more pointed, and somewhat coloured. *Panicles* terminal or short, with opposite, diverging, hairy branchlets, very large, crowded with opposite, brachiate, compound racemes, and those again crowded with opposite flowers, bractes, and small floral leaves; every part densely clothed with much ferruginous hair. *Flowers* tawny, with ferruginous hairs, short-pedicelled. *Bractes* linear-lanceolar, opposite, one-flowered. *Calyx* superior, campanulate, five-toothed, both sides hairy. *Petals* five, lanceolar, much longer than the segments of the calyx, outside clothed with appressed fulvous hairs. *Filaments* ten, much longer than the corol, five inserted immediately under the petals, and five deep in the tube of the calyx. *Germ* five-angled, hairy, one-celled, containing two *ovula*, attached to the top of the cell. *Style* length of the stamina. *Stigma* simple. *Seed* five-winged, villous. *Integuments* two. The *exterior* is the soft, villous winged tunic; the *inner* a thin dark brown membrane, adhering to the *cotyledons*. *Perisperm* none. *Embryo* inverse. *Cotyledons* angularly-convolute. *Radicle* superior.

11. C. *decandrum*. *Willd.* 2. 319. *Corom. pl.* 1. *N.* 59.

Shrubby, climbing. *Leaves* opposite, oblong, smooth, floral leaves coloured, and villous. *Spikes* terminal, and axillary; *flowers* decandrous. *Capsules* five-winged.

Teling. Arikota.

It is a large, climbing shrub, a native of forests and mountains, &c. Flowers during the cold season.

Stem woody, climbing. *Leaves* opposite, reflected,

short-petioled, oblong, acute, waved, smooth, about six inches long, and three broad. *Floral* leaves small, coloured, downy. *Spikes* numerous, terminal and axillary. *Bractes* opposite, lanceolate, one-flowered. *Calyx* campanulate, five-toothed. *Corol* five-petalled. *Stamens* ten. *Seed* five-winged.

12. C. *purpureum. Willd.* 2. 319. *Vahl. Symb.* 3. 51.

Scandent. *Leaves* opposite, broad-lanceolate, glossy, underneath purple. *Spikes* panicled, terminal, flowers decandrous.

Cristaria coccinea. *Sonnerat. it.* 2. 247. *t.* 140.

A native of the Mauritius, from thence introduced into the Botanic garden at Calcutta.

GRISLEA. Schreb. gen. n. 642.

Calyx from four to six-toothed. *Corol* from four to six-petalled, inserted into the fissures of the calyx. *Filaments* long, ascending. *Capsule* superior, two-celled. *Seeds* numerous.

G. *tomentosa. Willd.* 2. 321. *Corom. pl.* 1. *N.* 31.

Shrubby. *Leaves* opposite, stem-clasping. *Racemes* axillary. *Petals* minute; *stamina* eleven, or twelve.

Lythrum *fructicosum. sp. pl.* 641.

Dhawry. *Asiat. Res.* 4. *p.* 42.

Sans. Agnijwala, and Dhatree.

Teling. Seringir.

Beng. Dhau-phool.

A very beautiful, flowering shrub, or small tree, a native of the hills and vallies through the northern Circars, &c. &c. It flowers during the cold, and the beginning of the hot season, and the seed ripens in the rains.

Stem and principal *branches* erect, smaller ascending. *Bark* rust-coloured; *twigs* drooping. *Leaves* opposite,

in a position between decussate and bifarious,stem-clasping, lanceolate, with cordate base, acute, above smooth, whitish underneath. *Racemes* axillary and below the leaves, over the leafless branchlets, often compound, short, bearing from five to fifteen flowers. *Flowers* pretty large, red, in a great measure permanent. *Calyx* red, twelve-toothed, the alternate ones very small, permanent, as is also the colour. *Petals* six, small, linear, lanceolate. *Filaments* twice the length of the calyx, alternately a little shorter, ascending, inserted into the calyx near its base, and projecting along its under side. *Germ* superior, two-celled. *Style* shorter than the stamens. *Stigma* bifid. *Capsule* two-celled, two-valved, covered with the coloured permanent calyx. *Seeds* most numerous. *Receptacles* reniform, large.

Note. The bright red, permanent calyx, which retains its colour till the seeds are ripe, gives to this shrub a very gaudy appearance.

ROXBURGHIA. Banks.

Calyx four-leaved. *Corol* four-petalled, their lower half carinated on the inside. *Anthers* sessile in the grooves formed by the carinas of the petals. *Germ* superior, one-celled, many-seeded; attachment inferior. *Capsule* superior, one-celled, two-valved. *Seeds* several, each sitting on a spongy receptacle.

R. gloriosoides. Willd. 2. 321. *R. Corom. pl.* 1. *N.* 32.

Teling. Kanipoo-tiga.

Ubium Polypoides. *Rumph. Amb.* 5. *p.* 364. *t.* 129.

Compare with *Stemona tuberosa. Lourier. Cochin Ch. p.* 490.

This elegant plant is a native of moist vallies up amongst the Circar mountains. Flowering time the cold season.

Root perennial, compounded of many, smooth, cylindric, fleshy tubers, of from six to twelve inches long, and from three to five in circumference about the middle; they taper equally towards each end. *Stems* perennial, or more, twining, smooth, running over trees, &c. Branches like the stem, round, smooth, and slender. *Leaves* sometimes alternate, sometimes opposite, petioled, nearly depending, cordate, fine-pointed, entire, smooth, shining, in substance soft and delicate, generally eleven-nerved, with beautiful very fine, transverse, veins running between the nerves; from four to six inches long, and from three to four broad. *Petioles* slightly channelled, smooth; one and a half and two inches long. *Peduncles* axillary, single, erect, the length of the petioles, generally two-flowered. *Pedicels* clubbed, short. *Bractes* one, lanceolate, at the base of the pedicells. *Flowers* large, and beautiful, but fœtid. *Calyx* four-leaved; leaflets lanceolate, membranaceous, striated, coloured, revolute, placed immediately below the petals. *Corol; petals* four, nearly erect, lanceolate, the lower half is rather broader than the upper, and along its inside runs a deep, sharp, slightly waved keel, which forms on each side of it, a deep groove, or hollow; these four keels converge, and in some measure adhere together, which brings the side of the petals close so as to resemble a tube; the upper part of the petals is narrow, first bending out a little, then converging at their points. *Nectary* composed of four, lanceolate, yellow bodies, each sitting sessile on the apex of the keel of the petals, converging into one conical dome. *Filaments* none. *Anthers* eight, linear, lodged in the grooves formed by the keel of the petals, adhering their whole length, but their chief insertion is near the base. *Germ* superior, cordate, compressed, one-celled; *ovula* many, attached to the bottom of the cell, cordate. *Style* none. *Stigma* pointed. *Capsule* ovate, compressed, one-celled, two-valved, opening from the apex; it is

about an inch and a half long, and one broad. *Seeds* from five to eight, inserted by pedicels into the bottom of the capsule, cylindric, striated; the *pedicels* are surrounded with numerous, small, pellucid vesicles.

Note. This was one of the last plants Dr. Konig saw. It was brought in when he was on his death bed; he did attempt to examine it, but was unable, the cold hand of death hung over him; he desired I would describe it particularly, for he thought it was uncommonly curious, new, and beautiful. This observation, from a worthy friend, a preceptor, and predecessor, has made me more than usually minute in describing and drawing it.

MIMUSOPS. Schreb. gen. n. 644.

Calyx from six to eight-leaved, alternately smaller. *Corol* one-petalled, segments many in a double series, with alternate scales on the inside. *Germ* superior, from six to eight-celled, cells one-seeded; attachment interior. *Berry* one or more seeded. *Embryo* erect, and furnished with a perisperm.

1. M. *elengi. Willd.* 2. 325. *R. Corom. pl.* 1. *N.* 14.

Leaves alternate, short-petioled, oblong, pointed, waved, smooth.

Bacula. *Asiat. Res.* 4. *p.* 273.

Elengi. *Rheed. Mal.* 1. *t.* 20.

Beng. Bokul.

Hind. Mulsari.

Teling. Pagadoo.

Tam. Magadoo.

The Kunki of the native Portuguese.

I have only once found this tree in its wild state. It was on the mountains in Rajamundree Circar, where it grows to be a middle-sized tree. On account of its fragrant flowers, it is very generally reared in the gardens of the

natives, as well as in those of the Europeans in India. It flowers chiefly during the hot season.

Trunk erect, generally from eight to twelve feet to the lowest branches. *Bark* pretty smooth. *Branches* exceedingly numerous, spreading, with the extremities ascending so as to form a most elegant, globular thick head. *Leaves* alternate, short-petioled, approximated, declined or depending, waved, very firm, both sides of a deep shining green; from three to four inches long and one or one and a half broad. *Stipules* small, lanceolate, concave, rusty, caducous. *Peduncles* axillary, from one to eight, short, clubbed, bowing, undivided, one-flowered. *Flowers* middle-sized, drooping, white and fragrant. *Calyx* inferior, eight-leaved, in a double series; *leaflets* lanceolate, the four exterior ones leathery, larger, and permanent. *Corol* one-petalled. *Tube* very short, fleshy. *Border;* it may be divided into a double series of segments, and a single nectary, or a single series of segments, and a double nectary; the first method I shall follow. I therefore consider the border to be composed of a double series of segments; the *exterior* one consists of sixteen, spreading; the *interior* one of eight, generally contorted, and converging, all are lanceolate, a little torn at their extremities. *Nectary* eight-leaved, conical, ragged, hairy near the base, inserted alternately with the filaments, into the mouth of the tube, converging. *Filaments* eight, short, hairy. *Anthers* linear, sharp pointed, below two-parted, converging. *Germ* eight-celled, with one *ovula* in each attached from their middle to the lower end of the conic axis. The germ of *Achras Sapota* is exactly the same, only from eight to ten-celled. *Berry* oval, smooth, when ripe yellow, and edible, one or more celled, according to the number of seeds that ripen, which is generally one. *Seed* solitary, oblong, compressed; attached to the bottom of the cell; covered with a smooth, hard, thick integument, lined with a veined membrane. *Perisperm* conform to the seed, two-lobed,

pointed at the base, the lobes uniting round the radicle; above the radicle they are often entirely divided by the large cotyledons, which extend to, or rather through its margins. *Embryo* erect. *Cotyledons* large, oval. *Plumula* minute. *Radicle* inferior, linear-oblong.

2. M. *Kanki. Willd.* 2. 326.

Leaves scattered, petioled, about the ends of the branchlets, obovate-oblong, obtuse, hoary underneath. Fruit oval, drooping.

Flowers hexandrous.

Metrosideros macassarensis. *Rumph. Amb.* 3. *t.* 8.

Manil-kara. *Rheed. Mal.* 4. *t.* 25.

Malay. Booa-sow.

Achras *dissecta. Linn. Supp.* 210. *Forst. pl. escul. N.* 13.

A native of the Malay Islands, Malabar, &c. It flowers during the hot season ; the fruit is edible, and large.

3. M. *hexandra. Willd.* 2. 326. *R. Corom. pl.* 1. *N.* 15.

Leaves alternate, long-petioled, obovate, emarginate, smooth. *Flowers* hexandrous.

Tamul. Pallæ.

Teling. Palla.

This tree is a native of the mountainous parts of the Circars ; it is never cultivated, nor have I seen it near cultivated places. It flowers during the hot, and beginning of the wet season.

Trunk erect, frequently when old it has large rotten excavations. *Bark* ash-coloured. *Branches* numerous, rigid, spreading, extremities nearly erect, forming a large shady head. *Leaves* alternate, petioled, broad, wedge-formed, or obcordate, deeply emarginate, very hard, both sides of a deep shining green ; from three to five inches long, and one and a half, or two broad. *Petioles* round, one, or one and a half inch long. *Peduncles* axillary,

from one to six, erect or spreading, nearly as long as the petioles, clubbed, undivided, one-flowered. *Flowers* considerably smaller than the former. *Calyx* inferior, six-leaved, three interior and three exterior; these last mentioned three are leathery. *Corol* one-petalled. *Tube* very short. *Border* like *Elengi*, consisting of two rows of segments, the exterior twelve, the interior six, all spreading. *Nectary* situated between the filaments, as in the former, but spreading, shorter and more deeply indented. *Filament* six, spreading. *Anthers* oval. *Pistillum* as in *Elengi*, but six-celled. *Berry* the size and shape of an olive, yellow, rarely more than one-seeded. *Perisperm, embryo*, &c. as in *Elengi*.

CYMINOSMA. Gært.

Calyx four-leaved. *Corol* four-petalled. *Berry* superior, four-celled. *Seed* solitary. *Embryo* inverse, and furnished with a perisperm.

C. *pedunculata. R.*

Jambolifera *pedunculata*. *Willd.* 2. 326. *Vahl. Symb.* 3. 52. *t.* 61. *good.*

Cyminosma, baccæ ovato acuminatæ. *Gært. sem.* 1. *p.* 281. *t.* 58. *f.* 1.

Perin-panel. *Rheed. Mal.* 5. *t.* 15.

Dr. Konig's description of this plant as given by Dr. Dryander, in the 2nd. vol. of the Transactions of the Linnæan Society; page 233 is very correct.

A native of Ceylon, Chittagong, &c.

XYLOCARPUS. Schreb. gen. n. 646.

Calyx four-toothed. *Corol* four-petalled. *Nectary* eight-cleft, staminiferous. *Capsule* four-valved, cells uncertain, replete with from six to twelve, angular, variously shaped seeds. *Embryo* centrifugal.

X. *granatum. Willd.* 2. 328.

Leaflets opposite, from two to three pair, oblong, smooth.

Granatum litoreum. *Rumph. Amb. vol.* 3. *t.* 61.

Tam. Kandalanga.

Cing. Kadul-gaha.

Beng. Pussoor.

This tree is a native of the Soonderbuns, (the lower Delta of the Ganges.) Fruit ripens in June and July.

Leaves alternate about the extremities of the branchlets, pinnate; from six to twelve inches long. *Leaflets* two pair, opposite, sessile, oblong, entire, obtuse, smooth, deep on both sides; about four inches long. *Petioles* round, smooth, dark brown. *Stipules* none.

GUAREA. Schreb. gen. n. 649.

Calyx four-toothed. *Petals* four. *Nectary* cylindric, bearing the anthers in its mouth. *Germ* superior, four-celled, cells two-seeded; attachment superior. *Capsule* four-celled, four-valved. *Seed* solitary. *Embryo* inverse; no perisperm.

1. G. *binertarifera. R.*

Arboreous. *Leaves* pinnate; *leaflets* from four to six pair, alternate. *Panicles* rigid, axillary, composed of dichotomous ramifications. *Nectary* double.

A native of the eastern parts of Bengal, where it grows to be a tree of considerable size. Flowering time the beginning of the rains, in June. Seed ripens in February.

Trunk straight. *Bark* smooth, between ash colour, and olive. *Branches* patent; *young shoots* round, and pretty smooth. *Leaves* alternate, pinnate, from one to seven on each side, drooping, ovate-oblong, petioled, from one to two feet long; leaflets alternate, petioletted, taper-pointed, entire, smooth on both sides, about six inches

long, and two or three broad. *Petioles* common, flat on the upper side below the leaflets, where they are inserted, flexuose, and nearly round. *Petiolets* short, and round. *Stipules* none. *Panicles* axillary, or rather above the axils, rigid, not half the length of the leaves, composed of short, alternate, rigid, expanding ramifications. In old stunted trees, the panicle has dwindled into a small, rigid, simple raceme. *Bractes* minute, caducous at a very early period. *Flowers* rather small, of a pale yellow colour, indorous. *Calyx* one-leaved, small, campanulate; mouth four-toothed. *Petals* four, linear, recurvate, many times larger than the calyx, and rather longer than the exterior nectary. *Nectary* double; *exterior* subcylindric, and of a deeper yellow colour than the petals; mouth a little contracted, and obscurely eight-toothed, the inner one somewhat gibbous, about one-third of the length of the exterior one, fleshy, orange-coloured; *mouth* funnel-shaped, eight-toothed; *teeth* alternately smaller, and many of them dentate. *Filament* none. *Anthers* eight, inserted on the inside of the exterior nectary, a little within its mouth, and immediately under the eight fissures. *Germ* superior, ovate, four-celled, with two horizontally placed *ovula* in each, attached to the top of the axis. *Style* cylindric as long as the exterior nectary. *Stigma* enlarged; apex obscurely four-lobed, its base surrounded with a belt. *Capsule* globose, the size of an apple, of a hard fleshy texture, smooth; when ripe, of a deep yellow throughout, four-celled, four-valved, opening from the apex. *Seed* solitary, obovate, oblong, the size and appearance of a chesnut; no *aril*: *Integument* single, spongy; the outside polished, of a dark purple colour; inwardly yellow. *Perisperm* none. *Embryo* inverse. *Cotyledons* conform to the seed, firm, of a deep green round the edges, paler within. *Plumula* conic, two-lobed. *Radicle* ovate, superior, its apex considerably within the vertex of the cotyledons.

Of all I have yet examined, this tree comes nearest

to *Sandoricum Indicum*. I have not observed that any part of it possesses any peculiar odour, which, with the double nectary is a sufficient reason to induce me to think it is not the American species, *Guarea trichilioides*.

2. G. *paniculata. R.*

Leaves alternate, abruptly pinnate ; *leaflets* from six to twelve pair, alternate and opposite, ovate-lanceolate. *Panicles* axillary.

Kulikoura is the vernacular name in Silhet, where it grows to be a pretty large tree. Flowering time May and June ; the seed ripens the following April.

Young shoots slightly villous. *Leaves* alternate, abruptly pinnate, from eighteen to thirty inches long. *Leaflets* from six to fourteen pair, short-petiolate, the inferior pairs often alternate, those above opposite, somewhat unequally ovate, lanceolate, entire, taper-pointed, nearly smooth ; from five to ten inches long, and two or four broad. *Common petioles* round and villous. *Stipules* none. *Panicles* axillary, solitary, nearly as long as the leaves, spreading. *Ramifications* villous. *Flowers* very numerous, pedicelled, pretty large, of a pale yellow, expanding in the evening, and dropping the next morning. *Bractes* filiform, villous. *Calyx* cup-shaped, obscurely four-toothed, a little villous. *Petals* four, spatulate, obtuse, recurved. *Nectary* cylindric, the length of the corol, and hairy on both sides ; the mouth eight-toothed ; *segments* bidentate. *Filaments* scarcely any. *Anthers* oblong, attached round the inside of the mouth of the nectary. *Germ* superior, ovate four-celled, with one, rarely two *ovula* in each, attached to the top of the axis. *Style* the length of the nectary, hairy. *Stigma* globular. *Capsule* globular, the size of a crab apple, three or four-lobed, with a furrow between, smooth, of a dark orange colour, from three to four-celled, from three to four-valved ; *valves* thick, and spongy, with the partitions rising down the middle. *Seed* solitary,

round or oval, considerably flattened; *interior* half yellow, in the middle of which is a large whitish, flat umbilicus; *exterior* half of a smooth, shining, chesnut colour, across which is a trifling groove, marking the separation of the transverse cotyledons. *Perisperm* none. *Embryo* transverse. *Cotyledons* conform to the seed. The *Plumula* and *Radicle* together form a minute, round spot in the centre of the cotyledons, the former pointing to the umbilicus, and the latter to the circumference, *(centrifugal.)*

MOLINÆA. Juss.

Calyx five-parted. *Corol* five-petalled, unequal. *Filaments* woolly, ascending over the small petal. *Capsule* three-celled, three-valved. *Seed* solitary.

1. M. *canescens. Willd.* 2. 329. *Corom. pl.* 1. *N.* 60.

Leaves abruptly-pinnate; *leaflets* two pair, obtuse. *Racemes* on the leafless branchlets. *Style* single; *stigma* three-toothed.

Teling. Korivee.

Sapindus *tetraphyllus. Vahl. Symb.* 3. 54.

A native of the Circar mountains, and flowers about the time the Sapindus does.

Trunk not straight, but thick. *Bark* ash-coloured, a little scabrous. *Branches* numerous, spreading in every direction. *Leaves* alternate, abruptly-pinnate, sometimes ternate, about six or eight inches long. *Leaflets* opposite, generally two-pair, oblong, entire, smooth, shining, firm, five or six inches long, and two or three broad. *Petioles* round, four or five inches long. *Racemes* many, simple, or compound, from the extremities of the last, or two last years' leafless branchlets round the base of the present year's shoots. *Flowers* small, white, fascicled. *Calyx* inferior, five-parted. *Petals* five, four large, and standing on

the upper side, the fifth small, standing singly on the under side. *Nectary* the leaflets torn, and woolly. *Style* single. *Stigma* three-toothed. *Capsule* single, three-sided, three-celled, three-valved. *Seeds* one in each cell.

The wood of this tree is white and not so serviceable as that of *Sapindus rubiginosus.*

2. M. *lævis. Willd.* 2. 329.

Leaves abruptly-pinnate ; *leaflets* one or two pairs, cuneate-obovate, obtuse, entire, smooth. *Panicles* axillary. *Petals* round, with a woolly scale in each side near the base.

A handsome slender tree, a native of the Mauritius, where it blossoms in June and July, and the seeds ripen in October.

AMYRIS. Schreb. gen. n. 650.

Calyx four-toothed. *Corol* of four expanding *petals.* *Germ* superior, four-celled; *cells* from two to three-seeded; attachment interior. *Berry* one-seeded. *Embryo* inverse, without perisperm.

1. A. *simplicifolia. R.*

Leaves simple, oblong, and broad lanceolate. *Racemes* axillary, short, few-flowered. *Germ* two-celled.

A small tree, a native of Pulo Pinang. In this species, the leaf is joined to the apex of the petiole by an articulation, and there the leaf falls off, leaving the petiole, which is much more permanent.

The racemes are about twice the length of the petioles ; the flower small and white. The ripe fruit has not been found.

2. A. *commiphora. R.*

Arboreous, branchlets often ending in spines. *Leaves*

petioled, simple, elliptic, serrate, acute, with a pair of minute leaflets, or ears at the base. *Flowers* axillary.

Commiphora *Madagascarensis. Jacq. Schoenbr. 2. p.* 66. *t.* 249.

Sans. and *Beng. Googgula.*

The tree is a native of Silhet, Assam, &c. E. and N. E. from Bengal, in the Botanic garden at Calcutta it blossoms about the beginning of the hot season, in February and March, but seldom ripens its seed.

Trunk of our small trees crooked, and clothed with many spreading and drooping, crooked *branches* down to the ground. The short lateral *branchlets* often end in thorny points. *Bark* of the young shoots green and smooth, that of the larger *branches,* and *trunk* covered with a light coloured pellicle as in the common *birch,* which peels off from time to time, exposing to view a smooth green coat, which in succession supplies other similar exfoliations. *Leaves* alternate, petioled, oval, or elliptic, serrulate, smooth on both sides, at the base or apex of the *petiole* on each side, is generally found a small leaflet tending to give the whole the appearance of a ternate leaf. *Flowers* short-pedicelled, small, red, collected in little bundles on the small protuberant gems left by the former years' leaves, over the now leafless slender twigs. *Calyx, corol,* and *stamina* as in the genus. *Nectary,* eight glands alternate with the insertion of the filaments. *Berry* drupaceous, the size of a black currant, red, smooth. *Nut* two-celled, with a single seed in each.

The whole plant, while growing is considerably odoriferous, particularly when any part is broken or bruised, and diffuses a grateful fragrance, like that of the finest *myrrh,* to a considerable distance round, which for some time induced me to think it might be the plant from which that drug was procured, particularly as I observed on being wounded, there exuded much pale colour-

ed juice, but unfortunately for my conjecture, it is soon carried off by evaporation, leaving little or nothing behind. I have at various times of the year wounded the plant in different places, and placed various contrivances to collect the juice, but all I could ever procure, was a very minute portion of a gummy matter, which certainly resembled *myrrh*, both in smell and appearance, but had no tendency to be tenacious, or elastic, hence I conclude there must be a mistake in its being the elastic gum tree of Madagascar, as mentioned by Jacquin.

3. A. *gileadensis. Willd.* 2. 334.

Shrubby, the branches and branchlets spinous. *Leaves* short-petioled, ternate; *leaflets* from oval to elliptic, serrulate, smooth.

A native of Arabia. It has not yet blossomed in the Botanic garden at Calcutta, though a pretty large plant has been there five years.

4. A. *acuminata. R.*

Arboreous. *Leaves* ternate, and quinate, rarely of seven leaflets, pinnate; *leaflets* petioled, from ovate to oval, entire, acuminate, smooth. *Peduncles* diverging, three-flowered, or trichotomous, and many-flowered. *Stamens* shorter than the pistillum.

Introduced into the Botanic garden at Calcutta from the Moluccas, in 1798. In 1808 the young trees had acquired a short trunk, of eighteen inches in circumference, and not very straight, covered with very smooth greenish ash-coloured, fleshy bark.

Branches stiff but brittle and spreading in every directions; bark thereof like that of the trunk. In Bengal they blossom in May, but have not yet produced ripe fruit. *Leaves* alternate, ternate, and quinate-pinnate, rarely seven, and nine still more so; in Bengal deciduous in November and December, and appearing with the flow-

ers in May. *Leaflets* petioled, oval, or ovate, taper-pointed, entire, polished; about three inches long and about two broad. *Petioles* nearly as long as the leaflets, round, polished, and coloured. *Stipules* none. *Peduncles* axillary and from the base of the tender shoots below the young leaves, as well as from the apices of small lateral, leaflets scions; often as long as the petioles, diverging, three-flowered, or once, or twice dichotomous, and many-flowered. *Flowers* small, yellow. In Bengal they have hitherto proved abortive. *Bractes* in opposite pairs, at the divisions of the peduncles, lanceolate, smooth and fleshy. *Calyx* four-toothed, half the length of the petals. *Petals* four, linear-oblong, their lower two-thirds forming a tube, the upper third expanding, and acute. *Filaments* eight, shorter than the germ, alternately longer, inserted on a fleshy ring round the base of the germ. *Anthers* ovate-sagittate, apparently destitute of pollen. *Germ* ovate-oblong, clammy, two-celled, with two *ovula* in each, attached to the partition below the middle. *Style* scarcely any. *Stigma* large two-lobed, and these again somewhat two-lobed. *Fruit* not seen.

The *Bark* and all the tender parts of the plants, on being bruised or wounded, discharges a small quantity of a pale whey-coloured liquid, which possesses a fragrance something like that of the orange leaf.

In Bengal the flowers constantly prove abortive. I therefore conclude the tree to be polygamous, and that ours are all female-hermaphrodites, with imperfect stamina.

When the trees were younger, the leaflets were more numerous, often five and sometimes seven; I then thought it might be *Amyris Protium*, but have now reason to think it a new species.

5. A. *pentaphylla. R.*

Shrubby. *Leaves* pinnate-quinate; *leaflets* broad-lan-

ceolar, entire. *Panicle* terminal. *Berry* ovate, verrucose.

Plants of this species were presented to the garden at Calcutta, by Colonel Hardwicke, who found them indigenous in the vicinity of Cawnpore. In this garden they blossomed in March, when about four years old, and not more than three feet high, with a simple slender stem, covered with smooth, ash-coloured bark.

Leaves alternate, unequally pinnate, from six to twelve inches long. *Leaflets* generally five, often subalternate, short-petiolleted, entire, broad-lanceolar; from two to six inches long. When bruised between the fingers, very fragrant. *Stipules* none. *Panicles* terminal, erect, composed of short, expanding, two or three times dichotomous branches, with always a single short-pedicelled flower in the fork, which makes them appear trichotomous. *Bractes* minute. *Calyx* small, four-toothed. *Petals* oblong, concave, dotted with glands on the outside, much larger than the calyx. *Filaments* broad. *Anthers* ovate. *Germ* ovate, hairy, four-celled, with many *ovula* in each, elevated on a short receptacle, into the under part of which the filaments are inserted. *Style* very short. *Stigma* four-toothed. *Berry* ovate, pulpy, of a pale orange colour, verrucose; the size of a small cherry, lengthened to an obtuse point. *Seed* single, oval, smooth.

6. A. *heptaphylla. R.*

Shrubby. *Leaves* alternate, pinnate; *leaflets* alternate, from three to four pair, entire. *Panicles* terminal. *Berries* sub-cylindric.

Karunphul is the name it is known by about Calcutta, which is the only place in which I have yet found it.

Trunk, in all the plants I have seen, there is scarcely any, but many, suberect *branches*, covered with dark coloured, smooth bark; general height from five to six feet. *Leaves* alternate, pinnate; from six to twelve

inches long. *Leaflets* alternate; short-petiolleted; from three to four pair, obliquely oblong-lanceolate, entire, marked through and through with transparent dots, those towards the base of the common petiole smallest. *Panicles* terminal, composed of diverging, trichotomous ramifications. *Flowers* numerous, small, whitish yellow. *Calyx, corol, receptacles, stamens* and *pistil* as in the family. *Berry* oblong, covered with glandular dots; when ripe pale yellow. *Seed* solitary.

The leaves, when bruised, give out in a very strong degree the fragrance of the finest and freshest anise.

7. A. *nana. R.*

Shrubby. *Leaflets* from five to eleven, opposite, and alternate, ovate, crenulate, smooth. *Panicles* axillary. *Berries* round.

Introduced from the Moluccas, into the Botanic garden at Calcutta, where it blossoms in April and May. Seed ripe in June and July.

Trunk erect, in our young plants, simple. *Bark* smooth, dark brown, whole height of four years' old plants from two to five feet. *Leaves* alternate, pinnate, with an odd one. *Leaflets* from five to eleven, subopposite, or alternate, short-petioled, obliquely ovate, more or less crenulate, emarginate, smooth on both sides; general length from one to two inches. *Petioles,* and *petiolets* round, and somewhat glandular. *Racemes* simple, and compound, axillary, solitary; the simple shorter than the leaves, the compound, or panicles, they may be called, about as long as the leaves. *Flowers* minute, whitish, alternate, rather remote. *Calyx* four-toothed, glandular. *Petals* oblong, concave, marked with green glands on the back. *Filaments* short, with a broad concave base, converging over the germ. *Anthers* erect, oblong. *Germ* elevated on a short receptacle, four-lobed, glandular. *Style* short. *Stigma* four-lobed. *Berry*

nearly round, size of a large pea, pale greenish somewhat pellucid white.

Note. This description is taken from a small plant of two years' growth when it first blossomed, but I find they grow to be large, elegant, very fragrant shrubs.

8. A. *suffruticosa. R.*

Suffruticose; *leaflets* about eleven or thirteen, opposite, or alternate, short-petioled, ovate. *Panicles* axillary. *Berry* linear, oblong.

A native of Chittagong, and from thence sent by Dr. Buchanan to the Botanic garden at Calcutta, where it blossoms in the months of February and March. Seed ripe in April and May.

Stem simple, about two feet high. *Bark* of the lower woody part ash-coloured, of the young shoots green and villous. *Leaves* alternate, pinnate, expanding from six to sixteen inches in length. *Leaflets* generally from eleven to fifteen, opposite, and alternate, short-petiolleted, the lower pairs small, cordate-ovate, the superior oblong; all are entire, and downy on both sides. *Petiotes*, and *petiolets* round and downy. *Panicles* axillary, diverging, scarcely half the length of the leaves, villous. *Flowers* numerous, small, greenish white.

Calyx small, with four acute divisions. *Petals* four, expanding, concave. *Nectary* a small fleshy ring round the base of the germ. *Filaments* alternately a little shorter, enlarged at the base. *Anthers* large, two-lobed. *Germ* globular. *Style* the length of the stamens. *Stigma* small, four-lobed. *Berries* lanceolate, drooping, orange-coloured, succulent, marked with numerous, large, pellucid glands, nearly an inch long, and about a quarter of an inch in diameter. *Seed* solitary, shaped like the berry, green.

9. A. *sumatrana. R.*

Arboreous, tender parts villous. *Leaflets* from eight to

twelve pairs, opposite or alternate, unequally ovate-lanceolate, entire. *Panicles* terminal. *Berries* oval.

From Sumatra this tree has been introduced into the Botanic garden at Calcutta, where in five years the plants grew to the height of twenty feet, with a long, perfectly straight trunk, covered with smooth brownish olive-coloured back. The leaves when fresh and bruised emit a pleasant aromatic odour like that of the lemon leaf. The *filaments* spread out at the base, as in A. *punctata*; the *receptacle* of the germ is also the same, but the *style* and *stigma* are here entire. Flowers and ripens its seed at various periods in Bengal.

9. A. *punctata*, *R.*

Arboreous; *leaflets* from twelve to fifteen pair, ovate-lanceolate, crenalate, dotted. *Panicles* terminal. *Germs* elevated on a receptacle. *Berries* round, glandular.

I have only met with this tree in the Company's Botanic garden at Calcutta, to which it was brought from Chittagong some years ago. The Chinese gardeners say it grows in China also. The trees seem full grown, and are about twelve feet high, rather thin of branches, with the lower-most spreading near the surface of the earth. *Bark* smooth, dark rust-coloured. Leaves entirely deciduous during the cold season, they appear again with the flowers in March.

Leaves alternate, pinnate, with an odd one, from twelve to eighteen inches long. *Leaflets* alternate, short-petiolleted, from ten to twenty pairs, obliquely-oblong, the lower half being lanceolate, and the upper falcate. *Margins* crenulate; both sides of a dull green, and marked with glandular dots; size various, those about the middle are the largest, being generally from three to four inches long and about one broad. *Stipules* none. *Petioles* and *petiolets* round, a little scabrous, and somewhat hairy. *Panicles* terminal, oval, erect; the peduncles

and subdivisions a little hairy. *Bractes* minute. *Flowers* numerous, small, white. *Calyx* small, four-toothed. *Petals* four, oval, spreading, concave, inserted by claws, nectary a large fleshy receptacle, contracted at the middle, the lower swelling receiving the petals, and filaments, the upper supporting the germ. *Filaments* eight, below very much enlarged, with their insides concave to receive the corresponding convexity of the germ and nectary; they are shorter than the corol. *Anthers* oval. *Germ* four-sided. *Style* thick, four-sided, straight, the length of the stamens. *Stigma* truncated, obsoletely four-pointed. *Berry* as in the genus.

The leaves when bruised smell like sassafras.

XIMENIA.

Calyx four-toothed. *Corol* four-petalled, hairy on the inside, and revolute, forming a bell. *Drupe* superior; one-seeded.

1. X. *americana. Willd.* 2. 330.

Shrubby, armed. *Leaves* alternate, oval, emarginate. *Peduncles* many-flowered.

Teling. Oora-nechra.

A large, ramous, thorny shrub, a native of forests, and mountains. It flowers about the beginning of the hot season. *Trunk* and *branches* irregularly disposed. *Bark* scabrous, inwardly red, and very astringent. *Thorns* axillary, or terminating the branchlets, single, large, bearing leaves, flowers, and sometimes smaller thorns. *Leaves* alternate, short-petioled, oval, emarginate, smooth, about two inches long, and one broad. *Racemes* axillary, or from the extremities of small branchlets, one, two, or three together, small, erect, each bearing, generally, from four to six flowers. *Peduncles* and *pedicels* round, smooth. *Bractes* small, single. *Flowers* of a dull white,

small, many of them male. *Calyx* below, small, generally four-toothed, though sometimes five-toothed. *Petals* four or five, corresponding with the number of toothlets in the calyx, oblong, campanulate, with the upper half revolute, very hairy on the inside. *Filaments* from eight to ten, erect, short. *Anthers* linear, erect. *Germ* superior, conical. *Style* tapering, the length of the filaments. *Stigma* simple. *Drupe* oval, size of a nutmeg, pulpy, red, smooth, one-celled. *Nut* solitary, of the same shape as the drupe, not very hard. The ripe fruits are eaten raw by the natives; their taste is a compound of sour and bitter. The kernels are also eaten, and taste much like fresh filberts. The wood is yellow, like sandal, and its powder is often substituted for that of sandal by the brahmuns on this part of the coast in their religious ceremonies.

2. X. *ægyptiaca. Jussieu. genera. p.* 288.

Thorny. *Leaves* binate. *Flowers* decandrous. *Drupe* torose.

Hind. Hingen.

Teling. Garee.

In the *Memoirs sur L'Egypt*, is a paper on this plant, by M. A. Dehile, where he says the fruit passes in Egypt for *Chebulic myrobalans.*

This seems to me a new genus rather than a species of *Ximenia*. It is an hostile-looking, small tree, or large shrub, grows on the most inhospitable, dry, barren, uncultivated places in the Circars. Flowering in May.

Trunk erect; *bark* ash-coloured, crooked. *Branches* few, erect, with extremities spreading, and often drooping. *Thorns* axillary, single, large, strong, very sharp, frequently leaf and flower-bearing. *Leaves* scattered, petioled, binate. *Leaflets* short-petiolated, from oval to oblong, smooth, shining, when young downy; about an inch and a half long, and three quarters broad. *Peduncles*

axillary, short, downy, many flowered. *Flowers* small, greenish-white, pedicelled. *Calyx* inferior, five-leaved; *leaflets* oval, downy, spreading. *Petals* five, very like the calyx. *Nectary* a large, fleshy green, ten-notched, ten-grooved ring, surrounding the lower half of the germ. *Filaments* ten, rather shorter than the petals, inserted between the nectary and petals. *Anthers* cordate. *Germ* superior, woolly, five-grooved, five-celled, with one *ovula* in each, attached to the upper end of the axis. *Style* erect, short. *Stigma* slightly five-lobed. *Drupe* size of a pullet's egg, five-grooved, covered with a smooth, light grey, dry cortex. Pulp very like soft soap, exceedingly bitter, having an offensive greasy smell. *Nut* exceedingly hard, one-celled, one-seeded.

The nut is employed in fire works. A small hole is drilled in it, at which the kernel is extracted, and being filled with powder, and fired, bursts with a very loud report, so exceedingly hard is the nut; I know no other use to which any part of this shrub is put.

PIERARDIA. R.

Calyx four-leaved. *Corol* none. *Germ* superior, four-celled; cells two-seeded, attachment superior. *Style* scarcely any. *Stigma* tetragonal. *Berry* with three or four arilled seeds. *Embryo* inverse, and furnished with a perisperm.

P. *sapida. R.*

Lutco of the Hindoos, about Tippera, &c. to the eastward of Calcutta, where the tree is indigenous.

A few small trees are now in the Company's Botanic garden at Calcutta; they were originally from Tippera. Our Chinese gardeners say it is also a native of their country, where it is called Lutqua, and is cultivated for its agreeable fruit, our trees are as yet small, from six

to ten feet high, with little or no trunk, but many, sub-erect branches, covered with dark-coloured, scabrous bark. In their native soil they blossom in February, and ripen their fruit in June.

Leaves alternate, petioled, oblong, entire, smooth on both sides; generally about eight inches long. *Petioles* channelled, about two inches long. *Racemes* from the naked branches (such as are about the thickness of the little finger seem to produce the greatest number) drooping, covered nearly to the base with numerous, small, yellow flowers. *Bractes* lanceolate, inserted on the common peduncle, three-flowered, each flower hanging on its proper pedicel, there uniting into a common one rather shorter than its bracte. *Calyx*, or corol, for there is but one, four-leaved; *leaflets* oval, downy, fleshy, incurved over the stamens, and pistil. *Filaments* generally eight, short, incurved, inserted round the base of the germ. *Anthers* two-lobed. *Germ* superior, round, three or more generally four-celled, with two *ovula* in each, attached to the top of the cell. *Berry* round, size of a large gooseberry, smooth, yellow, from three to four-celled. *Seed* solitary, subovate; invested in a copious soft, white, subacid, edible aril. *Integument* reddish, firm, pretty thick. *Perisperm* conform to the seed, cartilaginous. *Embryo* nearly as broad and long as the perisperm, inverse. *Cotyledons* oval, three-nerved. *Radicle* oval, superior.

Note. This new genus, for so it seems to me, I have named after Francis Pierard, Esq. one of the Honourable East India Company's Civil Servants. His abilities as a Botanist, in discovering various new plants, with which he has enriched the Honourable Company's Botanic garden, claims for him this mark of distinction.

DODONŒA.

Calyx or *corol* four-leaved. *Capsule* three-celled, three-valved, three-winged. *Seeds* one or two in each cell.

1. D. *angustifolia. Willd.* 2. 344.

Polygamous, shrubby. *Leaves* linear-lanceolate. *Racemes* axillary and terminal.

A large ramous, erect shrub, very common on the barren uncultivated lands of Coromandel. It flowers during the rains.

Leaves scattered, sub-sessile, linear-lanceolate, smooth, entire, margins a little revolute; from two to four inches long; on the gems and young leaves a little bright yellow resin in generally found. *Racemes* axillary, and terminal, generally terminal, much shorter than the leaves, few flowered. *Flowers* long-pedicelled, small, of a greenish colour.

HERMAPHRODITE FLOWERS have sometimes a fifth more parts than in the genus, there is only one seed in each cell of the capsule, and sometimes the capsule consists of only two cells, and two wings.

FEMALE FLOWERS, are sometimes mixed with the hermaphrodite, and sometimes occupy a distinct plant; they want the stamens entirely, otherwise they agree.

2. D. *dioeca. R.*

Dioecous, shrubby. *Leaves* lanceolate. *Racemes* axillary and terminal.

A native of the interior parts of India. Flowering time the rainy season.

Stem erect, woody, with numerous, suberect, woody branches. *Bark* smooth, light brown. *Leaves* alternate, short-petioled, broad-lanceolate, tapering most towards the base, entire, smooth. *Racemes* axillary, and terminal, solitary, short, corymbiform. *Flowers* with long slender, nodding pedicels. *Bractes* minute. MALE. *Calyx* four-

leaved. *Corol* none. *Filaments* seven or eight, very short. *Anther* linear, six or eight times longer than the filaments.

FEMALE FLOWERS on a separate tree. *Calyx* as in the male. *Corol* none. *Germ* superior, three-lobed. *Style* long, three-sided, as if composed of three portions. *Stigma* three-pointed. The ripe seed vessel has not been found.

MELICOPE.

Calyx four-parted. *Corol* four-petalled. *Nectary* surrounding the germ. *Capsules* superior, four, singly ovate-oblong, two-valved, one-celled, with a single winged *seed* in each.

M. *tetrandra. R.*

Arboreous. *Leaves* opposite, obovate. *Corymbs* axillary. *Flowers* tetrandrous.

This tree is a native of Pulo Pinang where it blossoms in May.

Branchlets round, and smooth. *Leaves* near the extremities of the branchlets, opposite, petioled, cuneate, obovate, entire, smooth on both sides; from three to four inches long, and two or two and a half broad. *Petioles* scarcely an inch long, channelled, smooth, swelled at the apex, as if united to the leaf by an articulation. *Stipules* not visible. *Corymbs* axillary, opposite, long-pedunculed, supra-decompound, smaller ramifications villous. *Bractes* minute, solitary under each division and subdivision. *Flowers* pedicelled, small, very numerous. *Calyx* four-cleft, small, permanent. *Petals* four, cordate, acute, expanding, inserted between the calyx and nectary; on the disk of each rests a small, seemingly abortive stamen. *Nectary* a fleshy ring round the four-lobed germ. *Filaments* four, expanding, alternate with the petals, and

of the same length, inserted on the four angles of the nectary. *Anthers* cordate. *Germ* superior, immersed in the nectary, four-lobed. *Style* single. *Stigma* most slightly four-lobed. *Capsule* deeply two-lobed, each lobe oblong, one-celled, two-valved, but not opening readily. *Seeds* one or two in each lobe, or cell of the pericarp, inserted at the base, and all but the apex enveloped in an orange coloured, fleshy aril.

LAWSONIA.

Calyx four-toothed. *Corol* four-petalled, inserted into the bottom of the calyx alternately with the pairs of stamens. *Germ* four-celled, cells many-seeded ; attachment central. *Capsule* superior, four-celled, many-seeded. *Embryo* with centripetal radicle, and no perisperm.

L. *inermis. Willd.* 2. 344.

Arboreous, armed, in a bad soil. *Leaves* ventricose-lanceolate.

Alcanua. *Gœrt. sem.* 2. 133. *t.* 110.

Mail-anschi. *Rheed. Mal.* 1. *t.* 40.

Beng. Mendee.

Pers. Henna.

Arab. Erkan.

Teling. Gounta.

On the coast of Coromandel where it is indigenous, I have commonly found it in the state of a large shrub, though it is naturally a small, ramous tree. Here it is in flower and seed most part of the year.

Trunk crooked, of various lengths and thickness. *Bark* rust-coloured. *Branches* very numerous, standing in every direction ; *young shoots* somewhat angular. *Leaves* opposite, short-petioled oblong, or broad lanceolate, pointed at both ends ; about an inch long, and less than half an inch broad. *Stipules* wanting. *Panicles* terminal, globular,

cross-armed, many flowered. *Bractes* scarcely any. *Flowers* small, greenish-yellow, very fragrant. *Petals* orbicular, inserted into the divisions of the calyx; *margins* involute, and very much curled, as in *Lagerstrœmia*. *Filaments* longer than the corol, inserted by pairs into the calyx between the petals. *Germ* superior, four-celled; *ovula* numerous, attached to the axis. *Style* the length of the stamens, somewhat bent. *Stigma* simple. *Capsule* globular, the size of a grain of pepper, four-grooved, with the apex depressed, having in it part of the remaining style, four-celled; *partitions* membranaceous. *Seeds* angular, wedge-form, inserted by their apices round the middle, or enlarged part of a centrical, columnar receptacle. *Embryo* with centripetal radicle, and no perisperm.

It is much used for hedges, growing readily from cuttings; consequently fertile seeds are not often met with. The flowers are remarkably fragrant, whether fresh or dry, and are particularly grateful at a distance.

The species called *spinosa* is nothing more, I imagine, than the same plant growing on a dry sterile soil; at least, in such soils, I have often found it very thorny, the branchlets being then short and rigid, with sharp thorny points.

The fresh leaves beat up with *Catechu*, dyes the nails and skin of a reddish orange colour, which is much admired by the fair sex all over India. The fresh made paste is laid on at bed time, and removed in the morning; the colour remains till the nails or epedermis is renewed, or removed.

The leaves yield in decoction a porter coloured liquor; I have found it a deep orange colour, which acids destroy, while alkalies and infusions of astringent vegetables deepen it; this decoction dyes the finger of a deep orange; but does not communicate any colour to cloth variously prepared, nor could I procure any precipitate from the decoction worth attending to.

MEMECYLON.

Calyx four-toothed. *Corols* four-petalled. *Nectary* four glands, inserted just over the stamina, in the fissure of the calyx. *Berry* inferior, one-seeded.

1. M. *edule. R. Corom. pl.* 1. *N.* 82.

Shrubby. *Leaves* opposite, oval, smooth. *Umbellets* from the naked branches, and stems below the leaves.

Comus *sylvestris. Burm Zeyl. p.* 76. *t.* 31.

Teling: Alie.

The leaves are an ingredient in the dyes of Coromandel. I therefore suspect *M. tinctorium* of Willdenow may be the same plant.

A very common, small tree, or large shrub; it is to be found in every jungle all over the coast. It flowers about the beginning of the hot season.

Trunk very irregular in shape and size, covered with a dark coloured, scabrous bark. *Branches* numerous, nearly erect. *Leaves* opposite, short-petioled, oval, smooth, shining, firm, entire, with scarcely any veins, from three to four inches long, and from two to three broad. *Umbellets* many, compound, small, from scabrous elevations, where the leaves stood, over the old woody branches. *Peduncles* common, and partial, four-sided. *Pedicels* round, coloured. The generic character as in Richard's edition of the Genera Plantarum. *Seeds*, seldom more than one comes to perfection, though in the germ the rudiments of many are to be seen.

The ripe berries are eaten by the natives; they are astringent; the pulp is of a bluish black colour, and is found in considerable quantity.

2. M. *amplexicaulis. R.*

Leaves opposite, half stem-clasping, ovate-cordate. Flowers in sessile, axillary heads.

A native of Pulo Pinang.

Leaves opposite, sessile, half stem-clasping, ovate cordate, smooth, shining, entire, of a firm texture, and veinless; from four to six inches long. *Flowers* numerous, very small, collected in round, sessile heads, in the axills of the leaves, or below them. *Bractes* two at the base of each pedicel. *Calyx* four-toothed. *Petals* orbicular, sessile. *Stamens*, length of the petals. *Berries* about the size of a gooseberry, dry. *Seed* solitary, round.

MARLEA. R.

Calyx from six to eight toothed, superior. *Petals* from six to eight. *Germ* inferior, two-celled; cells one-seeded; attachment superior. *Drupe* with a two-celled nut. *Embryo* inverse, furnished with a perisperm.

M. *begonifolia. R.*

Marlea is the vernacular name in Silhet, where it is indigenous and grows to the size of a small tree, yielding timber which is employed by the natives in the construction of their houses. Flowering time the month of April; the seed ripens in July.

In its natural character it approaches near to *Alangium*; the number of stamina, and the internal structure of the germ and drupe, however, are so different, as to induce me to consider it sufficiently distinct to form a separate genus, which I do under its vernacular name of Marlea.

Leaves alternate, petioled, unequally cordate, as in *Begonia*, entire, or lobate, acuminate, smooth, five, or more-nerved; from four to eight inches long, by from three to five broad. *Petioles* round, a little villous, about an inch long. *Stipules* none. *Peduncles* axillary, the length of the petioles, dichotomous, many-flowered. *Flowers* of a middling size, short-pedicelled, petals white. *Ca-*

lyx superior, small, from six to eight-toothed. *Petals* from six to eight, linear, recurved. *Filaments* eight, short, flat, hairy, inserted within the petals on a glandular hemispherical body which crowns the germ. *Anthers* linear, very long. *Germ* inferior, two-celled, with one *ovula* in each, attached to the top of the axis. *Style* the length of the stamina. *Stigma* large, four-toothed. *Drupe* oval, obtuse-pointed, the size of a small cherry, pulp in small quantity but soft and dark coloured; round the base of the obtuse point may be traced the minute remains of the *calyx*. *Nut* single, conform to the drupe, brittle, though hard, black, two-celled, grooved on the sides, with the apex transversely two-toothed. *Seed* solitary, oval, flattened. *Integument* single, thin. *Perisperm* conform to the seed, soft and oily. *Embryo* inverse, nearly as extensive as the perisperm; *cotyledons* ovate, cordate, obtuse. *Radicle* superior, oval.

SYMPHOREMA.

Calyx; involucre, from six to eight-leaved. *Perianth* from six to eight-toothed. *Corol* one-petalled, from six to eight-cleft. *Capsule* none. *Seed* single, inclosed in the calyx.

S. *involucrata. Corom. pl. 2. N.* 186.

Teling. Suroodoo.

A large scandent shrub, a native of the Coromandel forests, &c. *Leaves* deciduous during the cold season, and coming out with the flowers in February, March, and April.

Stems woody, large, climbing. *Bark* ash-coloured. *Branches* straight, cross-armed. *Leaves* opposite, short-petioled, ovate, grossly-sawed, downy; about three inches long, and two broad. *Peduncles* fascicled, from the extremities of the naked branchlets, and last year's

axills, round, downy, each supporting a single umbellet. *Flowers* sessile, small, white. *Calyx ; involucre* from six to eight-leaved, from seven to nine-flowered ; *leaflets* chaffy, lanceolate, downy, permanent. *Perianth* inferior, one-leaved, tubular, from six to eight-striated, from six to eight-toothed, downy, permanent. *Corol* one-petalled ; *tube* short ; *border* from six to eight-cleft ; *divisions* linear, spreading. *Filaments* seven or eight, shorter than the corol, inserted just below its divisions. *Anthers* oblong. *Germ* superior, round. *Style* the length of the stamens. *Stigma* bifid. *Pericarp* none, the remaining withered calyx serving for one. *Seed* one, globular, smooth, the size of a pea.

I know of no use to which any part of this shrub is put, except that of fuel.

ALLOPHYLLUS. Schreb. gen. n. 643.

Calyx of two unequal pairs of suborbicular leaflets. *Corol* four-petalled, regular. *Stamina* regular. *Germ* two-lobed. *Stigma* bifid. *Berry* superior, two-lobed, with one seed in each.

A. *lanatus. Lourier. Cochin Ch.* 286.

Leaves ternate ; *leaflets* broad-lanceolate, serrate. *Racemes* axillary, simple. *Petals* equally disposed, and woolly on the whole of the inside.

A native of Pulo Pinang, Silhet, &c. It flowers in May. Arboreous ; young branchlets round, and smooth.

Leaves alternate, petioled, ternate. *Leaflets* subsessile, lanceolate, remotely and minutely serrate, smooth on both sides ; from four to six inches long. *Petioles* slightly channelled, smooth, about half the length of the leaflets. *Racemes* axillary, in pairs, or solitary, twice the length of the petioles, simple. *Flowers* numerous, very small, collected in little, one-bracted bundles. *Calyx* four-leav-

ed; *leaflets* roundish, the two exterior longer. *Petals* four, wedge-shaped, the whole of the inside very woolly, equally disposed round the stamina and pistil. *Filaments* eight, nearly the length of the petals. *Anthers* oval. *Germ* two-lobed. *Style* single. *Stigma* two-parted. *Pericarp* not seen.

ORNITROPHE. Juss.

Calyx of two unequal pairs of leaflets. *Corol* four-petalled, unilateral. *Germ* superior, two-lobed, two-celled; cells one-seeded; attachment subinferior. *Berries* two (though it frequently happens that one is abortive) one-seeded. *Embryo* folded, with inferior radicle and no perisperm.

1. O. *aporetica. R.*

Polygamous, shrubby. *Leaves* ternate; leaflets sessile, broad-lanceolar, acuminate, acutely serrate. *Racemes* simple. *Nectary* four-leaved.

Aporetica ternata. Forst. gen. N. 66.

Beng. Ghee-Kushee.

A shrubby species, about four or five feet in height; a native of the Silhet district where it blossoms in June.

Leaves alternate, petioled, ternate. *Leaflets* sessile, broad-lanceolar, remotely but acutely serrate, cuspidate, smooth on both sides, from four to six inches long, and from two to three broad. *Stipules* none. *Racemes* axillary, solitary, simple, erect, shorter than the leaves, villous. *Flowers* numerous, small, pale yellow, collected in little bundles, and embraced by some small, linear, villous bractes, many of them male. *Calyx* of two, opposite, rather unequal pairs of round concave leaflets. *Petals* four, unilateral, obovate, cuneate, emarginate, very woolly on the inside above the middle. *Nectary* within the base of each petal, a small, oblong, smooth,

pale yellow leaflet. *Filaments* eight, ascending opposite to the petals, very woolly near the base. *Anthers* oval. *Germ* superior, in some of the flowers minute, and abortive, in others hairy, and two-lobed, with one ovula in each, attached to the lower, and inner angle of the cell. *Style* erect. *Stigma* of two revolute lobes. *Berries* two, when both come to perfection, which is not frequent, obovate, smooth, succulent; when ripe, red, the size of a large pea, one-celled. *Seed* conform to the berry, and attached to the bottom of the cell. *Integuments* two; exterior whitish yellow and thin; interior membranaceous. *Perisperm* none. *Embryo* conform to the seed, folded. *Cotyledons* unequal, fleshy, sublanceolar. *Radicle* taper-pointed, a little curved, inferior.

2. O. *villosa. R.*

Shrubby, tomentose. *Leaves* ternate; leaflets oblong, ventricose, remotely serrulate on the anterior margin. *Racemes* axillary, and terminal, simple. *Petals* cuneiform, the whole of the inside woolly.

A native of Chittagong.

Young shoots flexuose, very villous. *Leaves* alternate, ternate. *Leaflets* suboblong, ventricose, remotely serrulate, upper surface scarcely hairy, but soft with brownish short hairs underneath; from six to eight inches long and from four to five broad. *Petioles* long, round, and very villous. *Racemes* axillary and terminal, when in the axils, which is by far the most frequent, solitary, all are very hairy, generally shorter than the petioles. *Flowers* numerous, small, hairy, collected into little fascicles all over the raceme. *Bractes* subulate, very hairy. *Calyx* of two very equal pairs of opposite, roundish, concave hairy leaflets. *Petals* four, unilateral, cuneiform, very woolly over the whole of the inside. *Nectary*, a gland at the base of each petal on the inside, and without the stamina. *Filaments* eight,

scarcely so long as the petals, surrounding the germ on all sides, woolly. *Anthers* oblong. *Germ* two-lobed, hairy, two-celled, with one ovula in each, attached to the bottom of its cell. *Style* short. *Stigmas* two, as long as the style, recurved.

3. O. *serrata. Willd.* 2. 322. *R. Corom. pl.* 1. *N.* 61.

Polygamous, shrubby. *Leaves* ternate; leaflets oval, serrate. *Racemes* axillary. *Petals* cuneate, woolly in the centre. *Berries* obovate.

Hind. Rakhal-phul.

Teling. Tauatikee.

It is one of the most common plants on the Coast of Coromandel; amongst the mountains it grows to be a small tree; on the low lands nearer the sea, it is always a ramous shrub, with grey spotted bark. It flowers during the wet season. It is also common in Bengal.

Leaves ternate. *Leaflets* ovate, pointed, serrate, generally bubbled, with frequently reflected *margins*, smooth on the back; from two to three inches long, and about one and a half broad. *Racemes* axillary, single, erect. *Flowers* numerous, small, white, fascicled. MALE and HERMAPHRODITE flowers mixed on the same tree, and sometimes on separate ones.

HERMAPHRODITE. *Calyx* four-leaved. *Petals* four, unilateral. *Nectarial* scales lacerated. *Filaments* very woolly near the base. *Germ* superior, two-lobed, with a single ovula in each, attached to the base of the partition. *Style* single. *Stigma* two-cleft. *Berry* succulent, generally single, the second lobe of the germ, being for the most part abortive, obovate, the size of a pea, smooth, bright red, one-celled. *Seed* conform to the berry. *Integuments* two, the exterior one white, thin, and rather hard like parchment, and in general larger than the embryo, which is closely embraced by the inner brown, rather

spongy, somewhat double covering. *Perisperm* none. *Embryo* conform to the seed, folded. *Cotyledons* two, sublanceolate, thick, and fleshy. *Radicle* taper-pointed, inferior. MALE FLOWERS exactly like the Hermaphrodite, except the pistil, which is wanting, or at most only the rudiments of one are to be found.

The ripe berries are eaten by the natives. The root is astringent, and employed by the Telinga physicians in substance to stop Diarrhœas.

4. O. *glabra. R.*

Shrubby. *Leaves* alternate, ternate; *leaflets* oblong, smooth, serrate, with hairy glands in the axills of the veins. *Racemes* axillary.

Schmidelia *racemosa. Willd.* 2. 435.

Usubus *triphylla. Burm. ind.* 81. *t.* 32. *f.* 1.

The species I am now describing, was found at Chittagong by Mr. Roxburgh, and by him introduced into the Botanic garden at Calcutta, where it blossoms in May, and ripens its seeds in August and September.

Stem nothing that deserves the name, but several, spreading branches. *Bark* somewhat scabrous, with ferruginous spots. *Leaves* alternate, ternate, petioled. *Leaflets* oblong, subsessile, serrate, the point rather obtuse, having small hairy glands in the axils of the veins underneath, from two to four inches long, and from one to two broad. *Petioles* channelled, smooth, from one to two inches long. *Racemes* axillary, solitary, simple, erect, twice the length of the petioles. *Flowers* numerous, short-pedicelled, collected into little fascicles, many of which are male. *Bractes* minute, acute, one, two, or three, to each fascicle of flowers. *Calyx* of two unequal pairs of round, permanent leaflets, the inner pair much larger. *Petals* four, placed on one side opposite to the stamens; cuneate, emarginate, on the inside of the exterior half is a tuft of wool. *Nectary*, a

yellow, somewhat crescent-shaped gland, between the petals and stamens. *Filaments* eight, as long as the petals, projecting in an ascending direction, woolly. *Anthers* roundish, incumbent. *Germ* superior, two-lobed, &c. as in *serrata*. *Style* short. *Stigma* two-cleft. *Berries* one or two, round, the size of a pea, when ripe red, pulpy. *Seed* solitary, the shape of the berry, and nearly the same size. *Embryo* as in *serrata*.

It differs from *serrata*; 1st. In being a spreading shrub, whereas that is erect and very ramous. 2ndly. In the young shoots, leaves and raceme being all very smooth, whereas there they are downy. 3dly. and lastly. In the points of the leaves being rather obtuse, there acute. But in habit the difference is most striking, when seen growing together.

5. O. *Cobbe. Willd.* 2. 322.

Shrubby. *Leaves* ternate; *leaflets* subsessile, serrate, downy, the pair ovate, oblong, the terminal one broad lanceolar. *Racemes* axillary, simple.

Rhus *Cobbe, sp. pl.* 382.

I have seen only one dry specimen of this, it was given me by Dr. Rottler, under its old name (*Rhus Cobbe.*) The tender parts of the specimen are very downy, the leaves narrower, and less deeply serrate than *O. serrata*, which it resembles almost exactly in every other respect. The flowers are all *male*, or *male hermaphrodite*: and agree so exactly with those of that plant, that one description may serve for both.

6. O. *integrifolia. Willd.* 2. 322.

Leaves alternate; leaflets petioletted, oblong, entire. *Racemes* axillary, simple, as long as the leaves. *Petals* reniform, long-clawed.

A native of the Moluccas.

7. O. *repanda. R.*

Leaves ternate; *leaflets* ovate, repand, smooth. *Racemes* axillary, compound, shorter than the leaves. *Petals* obovate, short-clawed, very woolly on the inside.

A native of the Moluccas.

SCYTALIA. Schreb. gen. n. 671.

Calyx four or five-toothed. *Corol* none, or of four or five petals regularly disposed. *Germ* superior, two-celled, two-lobed, cells one-seeded; attachment inferior. *Style* two-cleft. *Berries* two, though rarely more than one comes to maturity. *Embryo* erect, without perisperm.

1. S. *Lichi. R.*

Polygamous. *Leaflets* four pair, lanceolate, acute. *Calyx* four-parted. *Corol* none. Fertile *germ* two-lobed; *fruit* oval, murexed.

Scytalia *Chinensis. Gœrt. sem.* 1. *t.* 42. *f.* 2.

Euphoria. *Juss. Gen. pl. p.* 274.

Dimocarpus. *Lichi Lour, Cochin Ch.* 287. *Willd.* 2. 346.

Sapindus *edulis, Hort. Kew.* 2. *p.* 30.

Chin. Lichi, or Lee chee.

This very famous tree is now common in Bengal. It was originally brought from China. Flowering time February and March. The fruit ripens three months afterwards. The trees in Bengal are as yet small, but I have seen them in China fully as large as a middling sized ash-tree; they are also somewhat like it in appearance, with numerous, spreading branches, and a smooth ash-coloured bark. Specimens of this tree have been sent to me from old trees growing on the Garrow mountains.

Leaves alternate, petioled, abruptly-pinnate. *Leaflets* from two to six pair, opposite, short petiolleted, lanceolate, tapering to a long, fine point, very smooth and shin-

ing on both sides, of a firm texture, and almost veinless, from three to six inches long, and about one broad. *Panicles* terminal, large, oval, ramous, erect, or ascending, according to the direction of the branch that supports them. *Bractes* minute. *Flowers* small, greenish white, smell rather offensive. On some trees they are mostly hermaphrodite; while on others mostly male, but as far as I have observed never completely so.

HERMAPHRODITE. *Calyx* spreading, four, rarely five-lobed; both sides downy. *Corol* none. *Nectary* a large, fleshy, crenulate gland, into which the *stamens* and pistil are inserted. *Filaments* from six to eight, short, hairy, spreading. *Anthers* roundish, two-lobed. *Germ* superior, elevated on a short column, two-lobed, hairy, two-celled, each containing a single ovula, attached to the inner and lower angle of the cell. *Style* erect, rather short, hairy. *Stigma* two-cleft; *divisions* revolute. *Berry* generally single, though sometimes double, oval, the size of a pigeon's egg, covered with a thin, bright red, murexed bark; next under it is the pulpy aril, which is of a faint, transparent azure colour, and delicious subacid taste. *Seed* single, oblong, enveloped by the pulpy aril, smooth, brown and affixed by the base. *Embryo* erect, without perisperm, &c. as described by Gærtner.

MALE FLOWERS mixed with the hermaphrodite. *Calyx* and nectary as in the former. *Corol* none. *Filaments* from six to eight, thrice as long as in the hermaphrodite. *Germ* smaller than in the former and always abortive. *Style* very short and entire.

Independently of the well known fruit of this tree, it is highly ornamental, being one of the most permanent ever greens we have in India.

2. S. *Longan. R.*

Leaflets four pair, lanceolate, obtuse. *Corol* five-petalled, fertile germ, often three-lobed, fruit round, slightly cabrous.

Beng. Ash-phul.
Chin. Longan.
Dimocarpus *Longam Lour. Cochin Ch.* 287.

This is also a tree, and more regular in form than the preceding species, having a short straight trunk with a large, very dense, globular head. The leaves are the same in situation, and composition, but obtuse, somewhat downy on the under side, and with large parallel veins. *Panicles* the same. It is also a native of *China*, as well as of the mountainous countries which form the eastern frontier of Bengal. *Flowers* small, pale yellowish white, male and hermaphrodite, mixed on the same panicle.

HERMAPHRODITE. *Calyx* deeply five-parted, downy on both sides. *Petals* five, inserted between the calyx and nectary, lanceolate, spreading, hairy. *Nectary* as in the former. *Stamens* also the same, but the *filaments* much more hairy. *Germ* superior, and frequently three-lobed with a three-cleft style, otherwise as in the former. *Berry* single, or double, rarely triple, round, the size of a large cherry, covered with a brownish-grey, scabrous bark. Aril less in quantity than in the *Lichi*, and less grateful to the taste, but reckoned very wholesome. Seed solitary, round, smooth, and brown. *Embryo* as in the *Lichi*.

MALE. *Calyx* corol, and nectary as in the hermaphrodite. *Filaments* long, and very hairy. *Pistil*, abortive, &c. as in the *Lichi*.

The wood of both trees is hard, close-grained and white; I do not find that it is yet employed for any purpose in Bengal.

3. S. *Ramboutan. R.*

Polygamous. *Leaflets* two or three pair, oblong or broad lanceolate. *Panicles* axillary. *Calyx* four and five parted. *Corol* none. *Berries* with dry echinate bark.

Nephelium *Cappacum. Linn. Syst.* 851. &c.
Dimocarpus *crinita Lourier. Cochin Ch.* 288.
Mal. Ramboutan, or Rambosteen.

From the Malay Islands it has been introduced into the Botanic garden at Calcutta.

4. S. *rimosa. R.*

Polygamous. *Leaflets* three or four pair, subopposite, lanceolate. *Panicles* axillary and terminal. *Corol* none. *Berries* oblong, rimose, tubercled.

Tengoori is the vernacular name in Silhet, where the tree is indigenous and grows to a large size; flowers in March and April, and the fruit which is generally eaten, ripens in August.

5. S. *rubia. R.*

Leaflets four or five pairs, lanceolate. *Panicles* terminal, and axillary. *Corol* of five, smooth, orbicular petals. *Fruit* oblong, smooth, purple.

Lall Koe-pooia is the vernacular name in Silhet, where the tree is indigenous, and grows to a moderate size. It blossoms in March; the fruit ripens in May and is eaten by the natives. *Bark* of the young branches and branchlets rather scabrous. *Leaves* alternate, abruptly-pinnate, from one to two feet long. *Leaflets* four or five pair, subopposite, lanceolate, entire, rather smooth, except while very tender, then villous underneath, from six to twelve inches long. *Petioles* cylindric, rather rough. *Panicles* terminal, and axillary, shorter than the leaves; ramifications alternate, smooth, and spreading much. *Flowers* numerous, small, rosy, or purple, according to the age. *Bractes* small, triangular. *Calyx* five-leaved; *leaflets* unequal, roundish, concave, coloured. *Petals* five, round, sessile, concave, smooth in every part. *Filaments* about eight, short, inserted on the base of the short column which elevates the pistil-

lum. *Anthers* linear-oblong, incurvate. *Germ* superior, two-lobed, with one ovula in each, attached to the base of the partition. *Style* short. *Stigma* bifid; *segments* recurved. *Berries* one or two, the size and shape of an olive, smooth, dark purple; like the fruit of *Eugenia jambolana*, succulent, one-celled, the purple aril is eaten by the natives. *Seed*, solitary, the shape of the berry. *Integuments* two, exterior, ash-coloured, firm and thin; interior brown, softer, and thicker than the exterior. *Perisperm* none. *Embryo* erect. *Cotyledons* nearly equal. *Radicle* inferior, truncated.

6. *S. parviflora. R.*

Leaflets about seven, lanceolate, serrate, crenate. *Panicles* terminal. *Calyx*, and *Corol* of four leaflets, and petals.

A native of the Moluccas.

7. S. *oppositifolia. R.*

Leaves opposite, unequally pinnate, leaflets from three to five, lanceolate, remotely serrate, crenate. *Panicles* terminal.

A native of the Malay Islands.

8. S. *verticillata. R.*

Shrubby. *Leaves* simple, subverticelled, lanceolar, smooth, entire. *Panicles* terminal. *Petals* five, with a woolly scale near the base. *Germ* two-lobed, elevated on a receptacle.

This pretty shrub, or small tree was brought to this garden from the Moluccas, with the spice plants in 1798, where it blossoms and ripens its seed at different periods through the year.

Trunk straight, with many straight branches, and tolerably smooth, brownish bark; height of the plants, about seven feet, and are still growing fast. *Leaves* subverticelled, short-petioled, lanceolate, smooth on both sides,

and entire; about six inches long and about two broad. *Stipules* none. *Panicles* terminal, many crowded together; also single from the exterior axills, erect, with numerous diverging ramifications. *Bractes* minute, caducous. *Flowers* short-pedicelled, small, pale yellow, with a tinge of red. *Calyx* of five, unequal, roundish, concave leaflets. *Petals* five, oblong, expanding, each with one villous, nectarial scale on the inside near the base. *Filaments*, about seven, short, erect, inserted on a short fleshy receptacle, which also elevates the pistil. *Anthers* erect. *Germ* superior, on a short fleshy receptacle, two- rarely three-lobed; *lobes* one-seeded, attached to the bottom of the cell, &c. *Style* very short. *Stigma* two pointed. *Berries* generally twin, oval, the size of a small coffee bean, pulpy, when ripe, orange-coloured, supported on a short common receptacle. *Embryo* erect, without perisperm.

9. *S. Danura. R.*

Shrubby. *Leaves* simple, broad-lanceolate, with a cordate base. *Panicles* terminal, petals five, with two woolly scales at their base. *Germ* two-lobed. *Style* scarcely any.

Beng. Danoora.

This tree is a native of the Delta of the Ganges and of the parts to the east of it. *Flowering* time the beginning of the hot season.

Leaves about the extremities of the branchlets, simple, subsessile, broad-lanceolate, smooth, entire, about a foot long. *Panicles* terminal, composed of rather remote, diverging, compound, ramifications. *Flowers* numerous, solitary, pedicelled, of a pale pink colour. *Bractes* minute, one-flowered. *Calyx* of five, unequal, roundish, concave leaflets. *Corol* of five equal, equally disposed, oval, emarginate, short, clavate petals. *Nectary*, a double woolly scale at the base of each petal on the inside, also

a fleshy, crenulated ring round the germ, in which the stamens are inserted. *Filaments* from six to eight, half the length of the petals. *Anthers* erect, oblong. *Germ* two-lobed. *Style* rather shorter than the stamens. *Stigma* two-parted. In some flowers, (and they are, I suspect, always barren,) the germ is small, and the style only a conical point between its lobes. *Berries* one or two-celled, the size of a field bean, and juiceless. *Seed* solitary.

It was formerly observed, that I thought it necessary to keep the first described two species of *Scytalia* distinct from the genus *Sapindus*, on account of the regular corol, or its entire absence; the same reason prevails here. To the former, Scytalia, I assign a regular corol with the stamens equally disposed on all sides; whereas to the latter I give an irregular corol, with ascending filaments.

SCHLEICHERA. Willd.

Polygamous. *Calyx* five-toothed. *Corol* five-petalled, or none. *Germ* superior, three-celled, cells one-seeded; attachment inferior. *Capsule* berried, entire, or three-valved. *Seeds* from one to three, arilled. *Embryo* naked, without perisperm, curved, erect.

1. S. *pentapetala. R.*

Leaflets from three to four pair, subalternate, lanceolate. *Flowers* five-petalled. *Capsule* one-seeded.

A pretty large tree, a native of the forests of Silhet, where it blossoms in March and April, and the fruit ripens during the rains. The male tree is there called *Koipoora* and the hermaphrodite, or fertile tree *Poora-Koi.* This sort is not eaten, the aril, the only edible part, being very thin, and insipid.

Young shoots smooth. *Leaves* alternate, abruptly pin-

nate, from six to twelve inches long. *Leaflets* three or four pair, subopposite, lanceolate, entire, firm, lucid, obtusely acuminate, from four to eight inches long, and one or two broad. *Petioles* round, smooth. *Stipules* none. *Panicles* axillary, rather shorter than the leaves, crowded with numerous ramifications, and clothed with soft down. *Flowers* small, and very numerous, of a dull yellowish green. MALE. *Calyx* five-parted; *segments* broad-cordate, a little hairy. *Petals* five, lanceolate, with two small, smooth, incurved scales at the base, as in the *Sapindi*. *Nectary* a torulose hairy ring between the insertions of the petals and filaments. *Filaments* seven or eight, the length of the petals, or longer. *Anthers* two-lobed. *Germ* an oblong gland.

HERMAPHRODITE and MALE flowers on a separate tree. *Calyx*, *corol*, and *nectary* of the hermaphrodite, like those of the male. *Filaments* shorter, but the *anthers* as in the male. *Germ* oblong, three-celled, with one ovula in each, attached to the bottom of its cell. *Style* scarcely any. *Stigma* of three recurved lobes. *Capsule* the size of a black currant; tapering into a pedicel at the base, marked with three sutures on the outside, generally one-celled, three-valved; the *valves* containing little cells filled with a fragrant balsam. *Seed* generally solitary, the size of a small pea, round, enveloped in a thin, succulent aril. *Integuments* single, smooth, brown. *Perisperm* none. *Embryo* curved, erect, greenish. *Cotyledons* unequal, one-curved, the other, viz. the inferior one, doubled. *Radicle* conical, curved, inferior, its apex touching one side of the umbilicus.

The seed vessel of my other species. *S. trijuga. Willd.* 4. 1096. *Koon. Gœrt. sem.* 2. 486. *t.* 180. does not open spontaneously as in this, and sometimes contains three seeds, enveloped in a thick, succulent, subacid, edible aril. The proper integument is there also single; nor is

there any perisperm, but both the cotyledons are doubled, and equally long.

2. S. *trijuga. Willd.* 4. 1096.

Leaflets three pair, lanceolate *Flowers* apetalous.

Koon. Gœrt. sem. 2. *p.* 486. *t.* 180. *f.* 11.

Cing. Coughas.

Tam. Zolim-buriki.

Teling. May, or Roatangha.

A stout, handsome middling sized tree, a native of various parts of India. *Flowers* about February. The fruit ripens in May. It is allied to Melicocca, and Scytalia, probably not sufficiently removed from the former to authorize its forming a new genus. The pulpy subacid aril, is edible, and palatable.

Leaves about the extremities of the branchlets, abruptly pinnate, from eight to sixteen inches long. *Leaflets* from two to four pair, opposite, sessile, broad-lanceolate, or oblong, entire, pretty smooth on both sides; the lower pairs the smallest; from three to eight inches long. *Petioles* a little downy, from six to sixteen inches long. *Stipules* wanting. *Racemes* axillary, or below the leaves, round the base of the young shoots, solitary; in the male simple; in the hermaphrodite often compound; from two to four inches long.

MALE. *Calyx* cup-formed, five-toothed. *Corol* none. *Filaments* from six to ten, erect, many times longer than the calyx. *Anthers* oval, erect. *Pistil,* merely the rudiment of one.

HERMAPHRODITE flowers on a separate tree. *Calyx* as in the male. *Corol* none. *Nectary* a fleshy, yellow ring surrounding the insertions of the filaments. *Stamens* as in the male. *Germ* superior, ovate, three-celled, with one ovula in each, attached to the bottom of the cell. *Style* short. *Stigma* three-cleft, recurved, slender, downy.

Drupe the size of a nutmeg, a little pointed, covered with a tender, dry, grey bark. *Seeds* one, two or three, oblong, smooth, at the base obliquely truncate, and there affixed, each surrounded with its proper whitish, pulpy aril, which is of a pleasant acid taste, and is most grateful during dry weather. *Embryo* doubled, with inferior radicle and no perisperm.

The bark is astringent, rubbed up with oil, the natives of these parts use it to cure the itch. The wood is hard, and employed for many purposes by the natives.

SAPINDUS.

Calyx from four to five leaves. *Corol* from four to five petalled, in some unilateral. *Germ* superior, three celled, cells one-seeded; attachment inferior. *Berries* three. superior, more or less united. *Seed* solitary. *Embryo* erect, curved, or straight, no perisperm.

1. S. *laurifolius. Willd.* 2. 469. *Vahl. symb.* 3. 54.

Leaflets three-pair, ovate, lanceolate. smooth, rachis simple. *Panicles* terminal. *Petals* five, lanceolar, equally woolly all over the inside.

A stout, very shady tree, a native of various parts of India. *Flowering* time December; the seed ripens in April.

Trunk straight, when full grown as thick as a man's body. *Bark*, a mixture of ash and olive colour. *Branches* numerous, spreading much in every direction. *Leaves* alternate, abruptly pinnate. *Leaflets* three pair, though sometimes next to the panicles two pair, obliquely ovate-lanceolate, taper-pointed, entire and smooth on both sides; veins elevated and whitish; from four to six inches long. *Petioles* round. *Petiolets* short and rugose. *Panicles* terminal, broad-ovate, large, and very ramous; *ramification* rather scaly. *Bractes* minute. *Flowers,*

numerous, small, short-pedicelled, dull white. *Calyx* five-leaved ; *leaflets* oval, villous on the outside, and margin. *Petals* five, lanceolar, equally woolly over the whole of the inside, and without any appearance of the nectarial scales on the base, or margin, as in all the other species described by me, clothed on the outside with appressed brown hairs. *Filaments* woolly, shorter than the germ, and inserted between it and the five-lobed, hairy *receptacle.* *Germ* three-lobed, very hairy, three-celled, with one ovula in each, attached to the bottom of the axis. *Style* simple. *Stigma* three-toothed. *Berries* three, united, singly, the size of a cherry, when ripe soft, and of a yellowish-green colour, with a few brown hairs scattered over them ; one-celled. *Seed* round-obovate. *Integuments* two, the *exterior* one thick, tough and hard, smooth and black ; the *inner* one membranaceous. *Perisperm* none. *Embryo* conform to the seed, uncinate. *Cotyledons* unequal, thick, firm, fleshy, spirally incurvate, colored with a tinge of green. *Radicle* inferior, linear, lodged at the base of the seed, pointing to the lower and inner angle.

The berries are saponaceous, and used with those of the other species of the same nature.

2. S. *emarginatus. Vahl. symb.* 3. 54. *Willd.* 2. 469.

Leaflets two or three pair, oblong, retuse, or emarginate. *Panicles* terminal. *Calyx* and *Corol* of five equal, regularly disposed leaflets, and petals, with a woolly scale on each side of the latter.

Beng. Bura-reetha.

Teling. Konkoodoo.

A handsome, middling-sized tree, with a short trunk, and very large, dense, spreading head, decorated with beautiful thick, deep green foliage the whole year. *Flowering* time in Bengal, October ; the seeds ripen in April.

Leaves alternate, abruptly pinnate, from six to ten inches long. *Leaflets* generally two pair, opposite, short-petio-

letted, oblong, with entire margins, and rounded emarginate apex, smooth, of a shining deep-green. and downy underneath. *Petioles* round, villous. *Stipules* none. *Panicles* terminal, crowded with numerous ramifications of small, whitish, inodorous blossoms. *Bractes* small, caducous. *Calyx* of five, equal, oblong leaflets. *Petals* five, equal, regularly disposed, oblong, or lanceolate, outside hairy; with two inflected woolly tufts on their margin near the middle. As in most, if not all, the other species, there is a notched, fleshy, hairy ring between the insertion of the petals and stamina. *Filaments* eight, short, woolly. *Anthers* two-lobed. *Pericarp*, drupes from one to four, though three is the most common number, slightly conjoined, singly, somewhat of an oblique-ovate shape, with an elevation running from the base to the apex on the outside, smooth until wrinkled by age in drying, lined on the inside with a smooth, tough membrane, except round the insertion of the seed, and there hairy, as in S. *detergens*. *Seeds*, or nuts solitary, round, smooth, dark-coloured, indeed almost black; size of a large marrow-fat pea, unilocular thick and exceedingly hard.

The leaflets in this species are always very obtuse, and generally emarginate; this circumstance, together with a calyx, and corol of five parts, induces me to think *Gærtner's Sapindus rigida, p.* 341. 70. *f.* 3, must be another species.

3. S. *detergens. R.*

Polygamous. *Leaflets* from four to five pair, subalternate obliquely ovate-oblong, obtuse. *Petioles* simple. *Flowers* panicled. *Calyces*, and *corols* of five, equal, regularly disposed leaflets, and petals.

Hind. and *Beng.* Reetha.

Sans. Urista.

I have found this tree only in Bengal, though a native

of most parts of India. Flowering time the beginning of the hot season.

Trunk straight; *branches* also nearly erect, and few of them. *Bark* smooth, and ash-coloured; height of the tree generally about twenty feet. *Leaves* alternate, about the ends of the branchlets alternately pinnate; from six to twelve inches long. *Leaflets* subalternate, from eight to twelve in number, or from four to six pair, entire, obliquely lanceolate, oblong, smooth on both sides, and about four inches long. *Petioles* common, round, flexuose, smooth. *Panicles* terminal, and from the exterior axils, diffuse, composed of diverging, compound ramifications. *Calyx* five-leaved. *Petals* five, equal, and regular. *Nectary*, two woolly scales near the base of each petal. *Stamens* six or eight; *filaments* woolly. *Germ* three-sided, sitting, with the stamens, on a large glandular receptacle. *Style* single and short. *Drupes* generally solitary, seldom more than one coming to maturity, one-celled, subglobular, very smooth, and yellow, with a pretty large ridge round the base on the outside, the inside marked with the two abortive lobes of the germ. *Nut* solitary, round, and smooth, affixed to the inside of its cells, where a considerable quantity of woolly fibres intervene.

With the pulp of the fruit the Hindoos wash linen, &c.

In January, 1808, a healthy young tree of about twenty feet in height, reared from seed, received from North America, under the name *Sapindus Saponaria*, flowered abundantly, and ripened many seeds. It differs from my detergens; 1st. in being a larger tree, and more ramous. 2nd. In the leaflets being acute, and lanceolar, that is taper at each end. 3rd. In the calyx, and corol consisting of six parts each, which are round, and shorter than the germ; and in the petals being without the two woolly scales, so conspicuous in *detergens*. I therefore conclude they are distinct species, and doubt if the Ame-

rican tree is to be found indigenous in India, probably not in Asia.

4. S. *squamosus. R.*

Leaves pinnate; *leaflets* about three-pair, sub-opposite, obliquely ovate, lanceolate, acute, polished, entire. *Panicles* axillary and terminal. *Petals* five, regular, with two very large woolly scales. *Filaments* and *Germs* woolly.

A native of the Malay Archipelago; my specimens were gathered on the Island of Nasau-lant.

Young shoots straight, round, and a little villous. *Leaves* alternate, pinnate, sometimes abruptly, sometimes unequally, about six inches long. *Leaflets* about three pairs sub-opposite, short-petioletted, obliquely ovate-lanceolate, rather unequally divided by the nerve, entire, acute, firm and polished, about three inches long. *Petioles* round, villous. *Panicles* axillary, and terminal, the length of the leaves. *Flowers* numerous, small. *Calyx* five-cleft, hairy. *Petals* five, equal. *Nectarial* scales very large, and very woolly. *Filaments* eight, equally disposed, woolly, inserted on the inner edge of a glandular ring which separates them from the petals. *Germ* woolly.

5. S. *longifolius. Willd.* 2. 469.

Leaflets from four to eight pair, subalternate, short-petioletted, entire, linear-lanceolate, obtuse, the most inferior pair or two oblong. *Panicles* terminal. *Corol* regular, five-petalled.

A native of the Moluccas.

6. S. *rubiginosus. Willd.* 2. 469. *R. Corom pl.* 1. *N.* 62.

Arboreous, unarmed. *Leaves* abruptly pinnate; *leaflets* from four to five pair, lanceolate, villous. *Panicles* terminal. *Calyces* five-leaved. *Corol* four-petalled. *Style* and *Stigma* single. *Berries* distinct, oblong.

Teling. Ishee-rashee.

A large timber tree, a native of the mountainous parts of the Circars. It flowers about the beginning of the hot season.

Trunk perfectly erect, of considerable length and thickness. *Branches* numerous, ascending. *Branchlets* clothed with ferruginous pubescence. *Leaves* alternate, abruptly pinnate, about a foot long. *Leaflets* opposite, from four to six pair, sublanceolar, entire, above smooth, downy underneath; from three to six inches long, and from one to two broad. *Petioles* round, downy, ending in a downy bristle. *Panicles* terminal, large, erect, composed of simple racemes. *Calyx* five-leaved. *Petals* four, placed on the upper side, an entirely woolly scale arises from the base on the inside of each. *Style* single, ascending, shorter than the stamens. *Berries* three when all come to perfection, which is rarely the case, singly oblong, one-celled.

The wood of this tree is very useful for a great variety of purposes; being large, straight, strong, and durable, towards the centre it is chocolate-coloured.

7. S. *fruticosus. R.*

Shrubby. *Leaflets* from three to four pair, lanceolar, with an orbicular pair inserted on the base of the common petiole. *Petals* with small woolly scales at the base.

It is a native of the Moluccas, and from thence introduced into the Botanic garden at Calcutta in 1798, where it blossoms in March, and the fruit ripens in May and June.

The plants are as yet (1809) but small, but with an erect trunk, covered with smooth ash-coloured bark. The branches are few, weak, and much bent, even so as to be cernuus.

Leaves abruptly pinnate, about a foot long. *Leaflets* three or four pair, generally alternate, subsessile, lanceolar, entire, of a firm texture, and smooth on both sides;

from three to six inches long, (the exterior largest,) and from one to two inches broad. *Petioles* round, smooth. *Stipules*, or inferior pair of leaflets very remarkable, smooth, round cordate, inserted on opposite sides of the base of the common petiole. *Inflorescence* for the most part axillary racemes, though sometimes terminal panicles, composed of but few, expanding ramifications. *Flowers* small, with a ferruginous calyx, and white corol. *Bractes* solitary, one-flowered, subulate. *Calyx* of four smooth, suborbicular, ferruginous leaflets. *Petals* four, suborbicular, rather larger than the calyx, near the base of each is a double tuft of wool. *Filaments* eight, shorter than the corol, inserted into a woolly receptacle, which also receives the base of the germ. *Anthers* ovate. *Germ* superior, two or three-lobed, from two to three celled, each containing one *ovula* attached to the bottom of the cell. *Style* none. *Stigma* large, glandular, two-lobed. *Berry* two or three-lobed, size of a small cherry, of a bright, smooth, shining black colour, the pulp is in large proportion, and of a pleasant sweetish astringent taste. *Seeds* one in each lobe of the berry. *Embryo* erect, without a perisperm.

8. S. *serratus. R.*

Leaflets numerous, alternate, lanceolate, serrate; *rachis* simple. *Panicles* subterminal. *Petals* five, regular, with two very hairy clavate scales near the base.

A native of the Moluccas.

OCTANDRIA TRIGYNIA.

POLYGONUM. Schreb. gen. n. 677.

Calyx none. *Corol* five-parted resembling a calyx. *Seed* solitary.

Sect. Style two-cleft. *Seed* without angles.

1. P. *nutans. R.*

Annual, suberect, ramous. *Leaves* lanceolate. *Stipules* not bearded. *Corols* four-cleft. *Stamens* five. *Styles* two. *Seed* roundish, compressed.

Several plants came up accidentally in the Botanic garden at Calcutta, but from whence the seed came I cannot be certain.

Stem short, erect, soon dividing into many, first spreading, then ascending branches, covered with red bark, and maculated with still darker red, with a few short, white, stiff hairs, scattered over every part, as also over the underside of the nerves of the leaves. *Leaves* short-petioled, lanceolate, margins a little curled, and somewhat waved. *Stipules* membranaceous, smooth, truncated, not ciliate. *Racemes* terminal, and from the exterior axils, cylindric, nodding, most completely covered with numerous, small, white flowers. *Bractes* somewhat fringed. *Corols* four-cleft, opposite; *divisions* a little unequal. *Stamens* five. *Styles* two. *Seed* roundish, pointed, much compressed, smooth.

2. P. *lanatum. R.*

Procumbent, with erect branches. *Leaves* linear-lanceolate, woolly; *sheathes* lacerated. *Corol* four-cleft. *Styles* two-cleft. *Stamens* six. *Seeds* round, compressed.

Beng. Swet-panee-murich.

Annual, growing in ditches, &c. near Calcutta; and flowering during the rains.

Stems herbaceous, jointed, below procumbent, and striking root from the joints that rest on the ground; above erect, internally of a deep red colour, particularly at the joints, height various. *Leaves* short-petioled, narrow-lanceolate, entire, hoary underneath, long and about one inch broad, withering on the plant. *Stipules* nearly as long as the joints, striated, woolly, having their mouths lacerated, but not bearded. *Racemes* terminal, peduncled, erect, crowded with numerous, small, white flowers. *Bractes* many-flowered, &c. as in the other species. *Calyx* four-parted. *Stamens* six. *Style* two cleft. *Seed* round, pointed, much compressed, smooth, of a shining brown colour.

3. P. *pilosum. R.*

Erect, annual, hairy. *Leaves* long-petioled, ovate-cordate, downy; the mouth of the sheaths spreading open. *Style* two-cleft. *Stamens* from seven to eight. *Seeds* round, compressed, and somewhat thin at the edge.

Beng. Bura-panee-murich.

Lagunea *Cochin Chinensis. Lourier Flor. Cochin Ch.* 272.

Common near Calcutta, on the borders of such places as are inundated during the rains. Flowering time the beginning of the wet season.

Stems annual, suberect, branchy, the whole plant from two to four feet high, and covered with many soft greyish hairs. *Leaves* alternate, petioled, ovate-cordate, decurrent on the petiole, pointed, entire, both sides covered with much soft down, six inches long, and three broad. *Petioles* two inches long, inserted into the stipules. *Stipules* sheathing, hairy, striated, truncated, having the mouths ciliated, sometimes expanded, sometimes closely embracing the stem. *Racemes* long-peduncled, crowded with small white flowers. *Stamens* seven, five in the fissures of the corol, and two embracing the germ. *Style* half two-cleft. *Stigmas* globular. *Seed* round, compressed, smooth, brown.

Note. The ends of the succulent branches, after being wetted became covered with a clear thick gluten.

4. P. *tomentosum. Willd.* 2. 447.

Annual, suberect. *Leaves* lanceolar, silky; *sheaths* and *bractes* bearded. *Stamens* seven or eight. *Stigma* two-cleft. *Seed* round.

Teling. Yeatee-mallier.

Persicaria maderaspatana. *Pluk. t.* 210. *f.* 7. *good.*

This plant is annual, a native of ditches, rivulets, &c. appearing during the wet season.

Stems several, below procumbent, and there rooting at the joints, above erect, jointed, with but few branches; from two to four feet high. *Leaves* broad-lanceolar, short-petioled, silky, entire; from four to six inches long, and from one to two broad. *Stipules* long, sheathing the stem, with the petioles issuing from it a little above its base, lobed, having the *mouth* bearded. *Racemes* (generally from three to five,) terminal, or from the exterior axills, erect, peduncled, hairy. *Bractes* a large exterior one at each joint, which embraces the rachis, and fascicle of flowers; this is unequally lobed, and its mouth much bearded; besides this there is another common one which embraces the fascicle of flowers only; within it each flower has its proper bracte, these are not bearded. *Flowers* numerous, small, white, from six to eight at each joint, or set of bractes, but always expanding in succession. *Stamens* seven or eight. *Style* two-cleft, shorter than the stamens. *Seed* round, compressed, not in the least angular.

Cattle eat it greedily.

5. P. *glabrum. Willd.* 2. 447.

Annual, suberect, smooth, reddish. *Leaves* narrow-lanceolar. *Stipules* a little ragged. *Stamens* seven. *Style* three-cleft. *Seed* round.

Schovanna mudela muccu. *Rheed. Mal.* 12. *t.* 77.

Annual, a native of the same places as the other species

are, but less common. It is a much more elegant, delicate looking plant.

Stems as in the last species, but deeply tinged with red. *Leaves* short-petioled, linear-lanceolar, tapering much towards each end, smooth on both sides, entire, from five to seven inches long. *Stipules* sheathing, lobed, short, smooth, adhering firmly to the stem; mouth a little ragged, but not ciliated. *Racemes* as in P. *tomentosum*, but longer, slender and smooth. *Bractes* as in the former, but without a beard. *Flowers* numerous, rose-coloured, three or four in each set of bractes, appearing in succession, heptandrous. *Style* three-cleft, twice as long as the stamens. *Seed* ovate, compressed, not in the least angular.

6. P. *perfoliatum. Willd.* 2. 454.

Prickly, scandent, perennial. *Leaves* triangular. *Stipules* ample, round-oval, spreading, perfoliate. *Style* three-cleft. *Seed* round.

A native of various parts of India. From Nepal the seeds were sent by Dr. Buchanan to the Botanic garden at Calcutta, where the plants thrive well, and blossom most part of the year.

Stems and *branches* slender, scandent to a considerable extent, armed with numerous, acute, recurved prickles, but without pubescence. *Leaves* long-petioled, somewhat peltate, triangular, entire smooth on both sides, except a few, very minute prickles on the underside of the nerve and veins; size various, from one to three inches each way. *Petioles* as long as the leaves, armed. *Stipules* large, round, oval, surrounding the branch, or branchlet immediately within the insertion of the leaves; smooth and unarmed. *Spikes* terminal, solitary. *Bractes* cordate, spike-clasping. *Stamens* from eight to ten. *Style* three-cleft. *Seed* round, smooth, shining black, hid in the enlarged, livid, fleshy calyx, and in that state appear a berry.

It is probably a *Coccoloba*.

7. P. *chinense. Willd.* 2. 453.

Scandent, flexuose. *Leaves* oblong, with truncate base. *Bractes* ear-shaped. *Peduncles* terminal, subpanicled; *flowers* in globular pedicelled heads.

A native of the eastern parts of Bengal. Flowers in February, March, and April.

8. P. *cymosum. R.*

Shrubby, scandent, ramous. *Leaves* ovate-lanceolate, entire, acute, smooth. *Cymes* terminal; flowers in small heads, octandrous.

A native of Chittagong, where it flowers in April.

Sect. 2. *Style* three-cleft. *Seed* three-sided.

9. *P. tenellum. R.*

Annual, flaccid, ramous. *Leaves* lanceolar, with bearded sheaths. *Racemes* filiform, fascicles of flowers remote. *Tube* of the corol internally ribbed. *Stamens* from seven to eight. *Styles* three. *Seed* three-sided.

Found in ditches, &c. low wet places all over Bengal. Flowering time the rainy season.

Root fibrous, often biennial, if not perennial. *Stems* several, ramous, weak and straggling, slender, and smooth. *Leaves* subsessile, lanceolar, entire, smooth. *Stipules* on the outside furrowed, otherwise smooth, having their *mouths* crowned with long distinct filaments. *Racemes* terminal, often subpanicled, filiform. *Bractes* rather remote, obliquely truncated, ciliate, outside glandular. *Flowers* small, white. *Corol,* the mouth of its tube contracted with ridges, alternate, with the insertions of the filaments. *Stamens* eight. *Styles* three. *Seed* three-sided.

10. *P. barbatum. Willd.* 2. 447.

Branches erect, ramous, smooth. *Leaves* lanceolar, smooth. *Stipules* bearded, and hairy. *Racemes* twiggy,

with fascicles of flowers rather remote. *Stamens* eight. *Style* three-cleft. *Seed* three-sided.

Teling. Kunda-mallier.

It is a native of moist, or wet places amongst the mountains.

Stems several, erect, ramous, slender, smooth, from three to four feet high, joints a little swelled. *Leaves* short-petioled, lanceolar, smooth, from three to five inches long. *Stipules* as long as in P. *tomentosum*, mouth much ciliate, the whole outside hairy. *Racemes* terminal, long, twiggy, short-peduncled ; fascicles of flowers rather remote. *Bractes* as in the former species, the exterior one ciliate and hairy. *Flowers* rose colour, numerous, in succession from the same set of bractes, octandrous. *Style* three-cleft, length of the stamens. *Seed* three-sided.

Cattle are fond of all these four species.

11. P. *rivulare. Kon. Mss.*

Annual ; branches erect. *Leaves* narrow-lanceolate, pretty smooth. *Stamens* eight. *Style* three-cleft. *Seed* three-sided.

Velutta modela muccu. *Rheed. Mal.* 12. *t.* 76.

Annual, a native of similar places with the last two species, has nearly the same appearance and habit, but is rather more slender than even P. *glabrum.*

Leaves narrow-lanceolate, entire, pretty smooth ; from five to six inches long. *Stipules* short, obliquely lobed, much ciliate. *Racemes* as in the last described species. *Bractes* as in the former two, the exterior one is here bearded. *Flowers* numerous, crowded, from three to four to the set of bractes, also in succession. *Stamens* eight. *Style* three-cleft, twice as long as the stamens. *Seed* three-sided.

Note. The three-sided seed and three-cleft style, distinguish it from *P. tomentosum.*

12. P. *flaccidum. R.*

Annual, flaccid, smooth. *Leaves* lanceolate, with cordate base, smooth. *Stipules* long, ciliate. *Stamens* eight. *Style* three-cleft. *Seed* three-sided.

Beng. Panee-murich.

A native of ditches, &c. near Calcutta; flowering time the wet season.

Stem scarcely any, but many, slender, straggling, smooth, jointed, round branches. *Leaves* sessile, from the base of the stipules, lanceolate, with the base cordate, entire, and smooth on both sides; from one to six inches long. *Stipules*, bristles on the outside; *mouths* long ciliate. *Racemes* terminal, subcylindric, crowded with small, white flowers. *Bractes* ciliate. *Stamens* eight. *Style* half three-cleft. *Seed* three-sided, smooth, of a dark brown colour.

13. P. *elegans. R.*

Perennial, prostrate. *Leaves* lanceolar. *Flowers* axillary, crowded. *Stamens* eight. *Stigma* three-cleft. *Seed* three-sided.

A native of dry, uncultivated ground, appearing and flowering chiefly in the dry season.

Root simple, very long, yellow. *Stems* numerous, prostrate, from six to twelve inches long. *Branches* numerous, bifarious. *Leaves* alternate, bifarious, very short-petioled, lanceolar, dotted with small glandular points, smooth, margins red; about half an inch long. *Stipules* sheathing, membranaceous; *mouth* torn, and ciliated. *Bractes* sheathing, membranaceous. *Flowers* axillary, peduncled, small, rose-coloured, octandrous. *Calyx*, the three interior divisions obtuse, the two exterior pointed. *Styles* three, very short. *Seed* three-sided, with sharp angles.

14. P. *horridum. Buch.*

Scandent, angular; the angles armed with recurved, sharp aculei. *Leaves* sessile, linear, with a cordate base;

sheaths fringed. ***Spikes*** terminal, subcylindric subpanicled.

A native of the eastern parts of Bengal.

15. P. *fagopyrum. Willd.* 2. 455.

Stem nearly erect, unarmed. ***Leaves*** petioled, cordate, sagittate. ***Flowers*** in loose spikes; angles of the seed equal.

Found cultivated all over the mountainous countries north of Bengal, Oude, &c.

COCCOLOBA. Schreb. gen. n. 678.

Calyx beneath, five-parted, coloured. ***Corol*** none. ***Berry*** calycine, one-seeded.

C. *crispata. Buch.*

Perennial. ***Leaves*** short-petioled, ovate-oblong, margins finely curled, smooth; ***sheaths*** membranaceous, truncate. ***Panicles*** terminal, composed of numerous heads, on glandular peduncles.

A native of Nepal. In the Botanic garden at Calcutta it blossoms during the cold season.

CARDIOSPERMUM. Schreb. gen. n. 680.

Calyx from four to five-leaved. ***Corol*** four-petalled. ***Nectary*** four leaved, unequal. ***Capsules*** three, united, inflated. ***Seed*** solitary, globular.

C. *halicacabum. Willd.*

Scandent, five-seeded. ***Leaves*** compound, gashed, smooth. ***Tendrils*** umbelliferous.

Sung. Jyotishmutee.

Beng. Noaphutki Sibjhool.

Teling. Nalla goolisienda.

Very common all over the southern parts of India, and in flower, and seed all the year.

OCTANDRIA TETRAGYNIA.

ODINA. R.

POLYGAMOUS. HERMAPHRODITE. *Calyx* four-toothed. *Corol* four-petalled. *Germ* one-celled, *ovula* single, pendulous. *Drupe* superior, one-seeded. *Embryo* inverse, without perisperm.

MALE. *Calyx* and *Corol*, as in the Hermaphrodite.

O. *wodier. R.*

Sang. Jeevula.

Beng. Jiyal.

Teling. Gampina.

Hind. Kushmulla, Kashmulla, Kimul, &c.

It is a very large tree, a native of most mountainous parts of the coast, Bengal, &c. it is also frequently found in a cultivated state, chiefly about Madras where the sides of the roads are lined with them. It grows readily from cuttings, which is I believe, the chief inducement for employing it; for it is without leaves from the beginning of the year, till April or May, a season when shade is particularly wanted, for after that the weather, in general, becomes more clouded. Flowering time March and April, when it is perfectly naked of leaves. Nor could the flowers be any inducement to have it near the houses; in short there is nothing in its favor, but its growing easily and quickly.

The following description is taken from the tree in its wild state amongst the Circar mountains.

Trunk straight to the branches, of no great height but very thick. *Bark* pretty smooth, ash-coloured. *Branches* numerous, the lower spreading, the upper ones disposed in every direction. In a cultivated state it is generally pruned very close once in two or three years, which makes the branches shoot more erect, but takes away from the na-

tive beauty of the tree, and renders the shade when in foliage much less extensive, than in its natural state. *Leaves* alternate, about the ends of the branchlets, pinnate with an odd one, from twelve to eighteen inches long. *Leaflets* generally three or four pair, opposite, sessile, oblong, ovate, pointed, smooth, entire; about five inches long, and two broad, the exterior ones largest. *Racemes* terminal, filiform, pendulous if long, which they generally are, if short spreading. *Bractes* minute, falling. *Flowers* small, purple, inodorous.

In general the *Hermaphrodite* and *Male* flowers (there are no other sort that ever I saw,) are on the same tree, and even mixed on the same racemes; the male are by far the most numerous; sometimes but rarely they are on a separate tree.

HERMAPHRODITE. *Calyx* four-toothed, small, permanent. *Petals* four, oblong, concave, spreading. *Filaments* eight, spreading, rather shorter than the petals. *Anthers* ovate. *Germ* superior, oblong, one-celled, containing one *ovula,* attached to the top of the cell. *Styles* four, short, erect. *Stigmas* simple. *Drupe* kidney-form, smooth, the size of a large french bean, when ripe red, one-celled. *Nut* the shape of the berry, one-celled. *Seed* conform to the nut; no perisperm. *Embryo* inverse, curved.

MALE. *Calyx*, *Corol*, and *Stamens* as in the hermaphrodite. *Pistil* the rudiments of a germ, with a short, four-toothed style.

The wood of old trees is close grained, of a deep reddish mahogany colour towards the centre. This coloured part is serviceable for many uses, and looks well. The white wood is fit for no use that I know of.

From wounds in the bark there issues a gum, which, when dry, is much like pieces of dry glue; but I know of no use it is put to.

This is the tree Dr. Anderson calls *Wodur* in his miscellanies.

CLASS IX.

ENNEANDRIA MONOGYNIA.

LAURUS. Schreb. gen. n. 688.

Calyx one-leaved, six-cleft. *Corol* none. *Anthers* four-celled. *Germ* superior, one-celled; attachment superior. *Berry* superior, one-seeded. *Embryo* inverse, without perisperm.

SECT. 1. *Leaves opposite.*

1. L. *Cinnamomum. Willd.* 2. 477.

Leaves opposite, ovate-oblong, three-nerved. *Panicles* terminal, with the extreme ramifications three-flowered. *Nectarial glands* sagittate.

Cinnamomum foliis latis, &c. *Burm. zeyl.* 62. *t.* 27.

Kasse Koronde of the same.

Dar-cheen*i*, often pronounced dal-cheen*i*, the Persian, Hindee and Bengalee name of Cinnamon. Tw*u*k-p*u*tr*a*, *O*otk*u*t*a*, Bhri*g*a, Tw*u*ch*a*, Choch*a*, V*u*ranguk*a*, are some of the numerous Sanscrit names of Cinnamon, and Dr. Carey says the last three are also given to the bark of *Laurus Cassia*, commonly called *Cassia lignea*, or *Cassia* bark.

This well known tree seems still to require a little illustration, particularly as there are no doubt several varieties, if not species, included under this name. When General Hay Macdowall was in command on the Island of Ceylon, he sent to the Botanic garden at Calcutta in 1801, several plants of the first, or best sort; called by the Cingalese *Kasse Koronde*. These plants have now, 1810, attained to the height of twenty feet; the trunk is short, and from sixteen to eighteen

inches in circumference. The bark thereof scabrous, and considerably cracked in various directions, that of the younger parts smooth. The head remarkably ramous, large, and dense, for the last three or four years they have flowered freely during the months of January and February ; and ripened abundance of berries. It is from these the following description was taken. The drawing and description, No. 1058,* was made from young trees, which were reared by me at Samulkotā, from the seeds of the trees growing in Tinnevellee, near Palamkotta, which were procured from Ceylon in 1781 or 1782, and which differ from this in the leaves being much narrower at the base, in short, broad-lanceolar, and the three nectarial glands clavate. The sort introduced into Bengal by Mr. Hastings, between thirty and forty years ago is of this narrow leaved inferior kind.

Descriptions of Kasse Koronde.

Leaves opposite, rarely sub-opposite, short-petioled, ovate-oblong, entire, rather obtuse ; texture hard, surfaces polished, the three nerves often uniting a little above the base, and the lateral two vanishing beyond the middle of the leaves ; from four to six inches long, and from one and a half to three broad. *Petioles* about half an inch long, smooth, and channelled. *Panicles* terminal ; the large *ramifications* opposite, expanding, the extreme ones three-flowered, all more or less four-sided, and smooth. *Flowers* numerous, small, greenish-white, smell rather offensive. *Bractes* minute, caducous. *Calyx* six-cleft ; base entire, embracing the germ ; *border* divided into six, oblong, slightly villous segments, the three exterior rather broader, all are permanent and from a *cupula*, or small cup in which the berry sits, as in the common oak. *Corol* no other than the last described body. *Filaments* nine, the six exterior inserted on the base of the segments of the calyx,

* Sent to the Honourable the Court of Directors.

and without glands, the other three have a conglobate gland on each side, and alternate with the three short pedicelled, sagittate, *nectarial* bodies, inserted a little lower down. *Anthers* four-lobed, &c. as in the other species. *Germ* ovate, one-celled, containing one *ovula,* attached to the top of the cell. *Style* length of the stamina. *Stigma* three-lobed. *Berries* oblong-oval, smooth, succulent, when ripe, dark blackish purple, the size of a field-bean, one-celled, one-seeded. *Seed* conform to the berry. *Perisperm* none. *Embryo* inverse. *Cotyledons* oblong, fleshy. *Plumula* two-lobed. *Radicle* ovate, superior.

2. L. *malabathrica. Soland. Mss.*

Leaves oblong, three-nerved, with the lateral nerves distinct to the very apex. *Panicles* terminal.

Katou-karua. *Rheed. Mal.* 5. *t.* 53.

A native of the Malabar mountains.

3. L. *cassia. Willd.* 2. 477.

Leaves subopposite, lanceolar, triple nerved. *Panicles* axillary with simple, three-flowered ramifications. *Nectarial glands* sagittate. *Stigma* triangular.

Sans. Twuk-*putra.*

Tej-pat the Hindoo name of the leaves.

Carua. *Rheed. Mal.* 1. *t.* 57.

Cinnamomum perpetuo florens of *Burm. Zeyl.* 1. 28. is too broad in the leaf, and too ovate for this, and seems to me to agree better with my next species L. *multiflora,* which is also a native of Ceylon.

An elegant large tree, a native of the various mountains of the continent of India. The trees are now common in gardens about Calcutta, originally from the mountains of Tippera. Flowering time, in the gardens, the beginning of the warm season; the seed ripens in July.

Trunk straight. *Bark* smooth, of a greenish ash-colour. *Branches* numerous, forming an elegant, tall, oblong head. *Leaves* subopposite, drooping, short-petioled, lanceolar, triple nerved, smooth and polished on both sides; about five inches long, and one and a half broad. *Panicles* axillary, or terminal, on small axillary branchlets, as long as the leaves. *Ramifications* opposite, simple, each bearing three short-pedicelled, small, whitish flowers. *Bractes* minute, caducous. *Calyx* as in the genus. *Segments* villous. *Nectarial glands* sagittate, and yellow. *Filaments* nine, six in the exterior series, without glands; and three in the inner, with glands. *Stigma* clavate, three-lobed. *Berry* oval, the size of a black currant, smooth, succulent, when ripe black, one-celled. *Seed* conform to the berry. *Embryo* inverse, without perisperm.

This differs from all the other species hitherto described by me, not only in the narrowness of the leaves, but in the lateral nerves thereof issuing from the middle nerve considerably above the base. The panicles also differ greatly; for here the ramifications are simple, and bear three flowers; there they are compound, and umbelliferous. In both this, and *multiflora* (which is the species it comes nearest to,) the nectarial glands are sagittate, but there the stigma is peltate, here three-lobed.

4. L. *multiflora*. *R.*

Leaves opposite, three-nerved, ovate-lanceolar, the nerves vanishing towards the top. *Panicles* terminal, and axillary, with compound umbelliferous ramifications. *Nectarial glands* sagittate. *Stigma* peltate.

Cinnamomum perpetuo florens. *Burm. zeyl. p.* 63. *t.* 28. appears to be this plant, and is the only figure known to me that I can well refer to.

This small elegant tree, as far as I know, is only found in Ceylon, and approaches the true Cinnamon;

yet I must deem them distinct species for the reason mentioned throughout the description, and in a note at the bottom.*

Leaves opposite, short-petioled, ovate, or ovate-lanceolate, entire, very smooth on both sides, three-nerved, with the lateral nerves vanishing towards the apex. *Stipules* none. *Panicles* from the exterior axils, and terminal, crowded with numerous, cross-armed ramifications, dividing into others, and finally ending in umbellets of small, whitish-yellow flowers. *Calyx* of six divisions, which are sublanceolate, nearly equal and very downy, particularly on the inside. *Nectarial glands*, the three that stand alternate with the three interior stamens are sagittate, and purple. *Stamens*, the three interior filaments have each a pair of large, flat, crenulate glands near the middle, as in L. *Cinnamomum*, &c. *Anthers* with four poleniferous pits. *Stigma* large, peltate.

5. L. *culitlaban*. *Willd*. 2. 478.

Arboreous. *Branches* appressed. *Leaves* apposite, ovate, lanceolate, triple-nerved, retrofracted. *Panicles* terminal, and axillary. *Pedicells* three-flowered. *Nectarial* scales sagittate.

Mal. Culit-lawan, Culi-lawan, or Cortex caryophyllaides. *Rumph. Amb.* 2. *t.* 14.

About the year 1802, many plants of this tree were received into the Company's Botanic garden at Calcutta from Amboyna, and in the dry seasons of 1809 10 the only plant that remained alive blossomed. It is about twelve

* The remarkable, umbelliferous, extreme ramifications of the panicles in this species, readily distinguish it from others hitherto described by me. I must, at the same time say, that I think every attempt to find clear, correct, specific marks in the leaves alone, will prove fruitless.

feet high, slender as the common Cypress, in consequence of the branches being short, erect, and pressed to the stem. The bark of the trunk, which is about as thick as a man's arm, is ash-coloured; of the round young shoots a shining deep green, from it the Malays obtain an essential oil by distillation; and Dr. Fleming informs me that he has seen various specimens of it from Bencoolen, and says it smelt like a mixture of sassafras and cloves. I suppose that its medical virtues agree with those of the essential oils of those substances. Murray says that the inhabitants of Amboyna esteem it an excellent remedy in a retention of urine, given in a dose of six drops twice a day.

Leaves for the most part perfectly opposite, short-petioled, refracted, broad-ovate-lanceolate, triple-nerved, of a hard texture, and with a polished, deep green surface, from three to five inches long, and from one to two broad. *Panicles* terminal and axillary, shorter than the leaves, brachiate, the ultimate divisions three-flowered. *Flowers* small, white, inodorous. *Bractes* oblong, or lanceolate, opposite at the divisions of the panicle. *Calyx* to near the base, six-parted, &c. as in the other species. *Stamina* also as in the other East Indian species. *Nectarial glands* with very exactly sagittate heads. *Germ* ovate, one-celled containing one seed, attached to the top of the cell. *Style* of a middling length. *Stigma* obscurely three-toothed.

6. L. *nitida*. *R.*

Leaves opposite, broad-lanceolar, obtuse, triple-nerved, glossy. *Panicles* axillary, and below the leaves, with simple, three-flowered, ramifications. Glands of the inner filaments pedicelled.

Cassia *Coolit manees Marsden's Sumatra*, *p.* 125.

A native of Sumatra, from thence Dr. Charles Campbell sent plants in 1802, to the Botanic garden at Cal-

cutta under the Malay name *Koolit manees.* After seven years the young trees blossomed in February, and ripened their seeds in May.

Trunk straight, in our young trees the bark is yet quite smooth, and of a greenish ash-colour. *Branches*, and *branchlets* spreading. *Leaves* opposite, short-petioled, broad-lanceolar, distinctly triple-nerved to near the apex, permanent, of a firm texture, polished, and very smooth on both sides, but paler coloured underneath; five or six inches long, and from one and a half to two broad; when young, coloured; when bruised they emit a pleasant spicy odour. *Petioles* short, and channelled. *Panicles* below the tender leaves of the young shoots, and also solitary in their axils, and shorter than them, composed of opposite, and alternate, three-flowered, diverging peduncles. *Flowers* small, pale yellow. *Segments* of the calyx, (corol. *Linn.*) oval and hairy on the inside. *Nectarial glands;* the inner three cordate-sagittate, on short pedicells. Those attached to the inner three filaments, are also supported on short pedicells, which issue from their filaments a little above their base. This circumstance alone, if constant, distinguishes it from all the other species of this genus which I have yet met with, for in all the rest they are sessile.

Germ conical, one-celled, with one seed, attached to the top of the cell. *Stigma* three-lobed. *Berry* obovate, the size of a field-bean, polished, and when ripe, of a deep dark green bordering on grey, one-celled. *Seed* solitary, conform to the berry. *Integuments* two, both thin, and of a dark, dull brown colour. *Perisperm* none. *Embryo* conform to the seed, inverse, pale green. *Plumula* conic, three-lobed. *Radicle* roundish, superior.

7. L. *recurvata. R.*

Shrubby. *Leaves* subopposite, ovate, long-pointed, with the two lateral nerves evanescent towards the

apex. *Nectarial* glands with cordate heads. *Peduncles* axillary, three-flowered.

There are several trees of this species in Mr. Cox's garden at Russapugla near Calcutta, formerly Mr. Johnson's ; the plants are said to have been originally from China. Flowering time the hot season.

Trunk short, with suberect, rigid *branches* forming a large, oblong, erect bush. *Bark* smooth, and more or less green, according to age. *Leaves* subopposite, short-petioled, ovate, tapering to a long narrow point, recurved, three-nerved, with the two lateral vanishing towards the apex, on both sides smooth. *Peduncles* axillary, or opposite, on the present years shoots below the leaves; solitary, three-flowered. *Corol, nectary, stamens,* and *pistil* as in L. *Dulcis.*

The leaves possess a considerable share of a sweetish aromatic taste ; but are much weaker than those of *dulcis,* and the bark still more so.

8. L. *obtusifolia. R.*

Leaves opposite, three-nerved, lanceolar, obtuse. *Panicles* terminal, with an involucre of four large leaves, and a bud in the centre, smooth. *Nectarial glands* cordate-sagittate. *Berries* oval. Kinton is the vernacular name in Silhet, and Ramtejpat at Chittagong.

A large tree, a native of the mountainous countries immediately east of Bengal, where it blossoms in January and February, and the seed ripens in July and August. It has the habit of the Cinnamon tree, but grows to a much greater size, being as large as the mango tree. The timber is said to be very useful, and as it can be had of a large size, it is used for various purposes.

Branches opposite ; the young ones smooth, and somewhat four-cornered. *Leaves* opposite, when they attend the panicles subquatern, short-petioled, lanceolar, obtuse, entire, completely three-nerved, of a very firm texture,

smooth, of a deep, shining green on the upper surface, and glaucous underneath ; from six to ten inches long, and from two to three and a half broad. *Panicles* many, round a smooth scaly bud, which forms the apex of the branchlet, and also from the axils of their subquatern leaves, long-peduncled, subdecussate ; *ramifications* smooth, and tending to be four-cornered ; ultimate divisions three-flowered. *Flowers* very numerous, small, greyish-yellow. *Bractes* caducous at an early period, clothed with greyish, sericeous pubescence. *Calyx* six-cleft, &c. as in the genus, somewhat sericeous. *Nectarial filaments* hairy, with large cordate-sagittate heads. *Stamina* as in the genus, the inner three filaments have their glands clavate, and hairy. *Germ* superior, ovate, one-celled, containing a single *ovula*, attached to the top of the cell. *Style* shorter than the stamina. *Stigma* large, three-angled. *Berries* oval, succulent, the size of a field bean, smooth ; when ripe, black, one-celled, one-seeded, &c. as in the genus.

9. L. *dulcis. R.*

Leaves sub-opposite, three-nerved, lanceolate. *Panicles* terminal and axillary ; nectarial glands with purple cordate heads.

This elegant, tall, slender, small tree, I have only found in an Armenian's garden near Calcutta, who informs me that he got the plants from China about seven years ago ; they are in flower about the beginning of the hot season, in March and April, the seed ripens early in the rains.

Trunk straight, and high in proportion to its thickness ; *bark* ash-coloured, and smooth. *Branches* elegantly scattered in all directions, with extremities often pendulous, forming a slender, oblong head. *Leaves* opposite, or nearly so, drooping, short-petioled, lanceolate, entire, rather obtuse, three-nerved, with the lateral ones vanishing

above the middle, smooth, deep green on both sides; about four or five inches long, and from one to one and a half broad; when young coloured like those of the Cinnamon tree. *Panicles* terminal, or opposite near the extremities of last year's shoots, or the base of the present; when so, the coloured leafy shoot from the centre, gives to the whole the appearance of a large tufted panicle. *Bractes* minute, caducous. *Flowers* small, of a pale yellowish colour, on pretty long, slender, diverging pedicels. *Calyx* none. *Corol* as in L. *Cinnamomum*. *Nectarial glands* cordate, dark purple, on short, thick, yellow filaments. *Stamens* exactly as in L. *Cinnamomum*. *Germ* ovate. *Style* crooked, the length of the stamens. *Stigma* pretty large, and glandular.

From tho sweet aromatic taste, and smell of the leaves and bark of this pretty tree, I am inclined to think it is this which yields the thin, small, quilled cinnamon like Cassia, and Cassia-buds carried from China to Europe and elsewhere.

It is readily distinguished from L. *cinnamomum* by its long narrow leaves in which the nerves vanish a little above the middle, and by its cordate nectarial glands. From *Laurus Cassia* it is readily distinguished by its leaves; there the nerves are triple, (that is they meet the main or middle one considerably above the base of the leaves) and continue distinct to near the apex, as in *Carua Rheed. Mal. vol.* 1. *f.* 57.

SECT. 2. *Leaves alternate.*

10. L. *camphorifera. Willd.* 2. 478.

Leaves alternate, ovate-lanceolate, taper-pointed, three-nerved. *Panicles* axillary, with alternate corymbiform ramifications. *Nectarial glands* clavate, hairy.

The trees from which my description, and drawing of this famous plant are taken, grow at Hottentos Holland near Cape Town, Cape of Good Hope.

They were brought to that place from Sumatra, or Java by Governor Vanderstell, in 1692-3, the trunk of these trees, now 1798, is short in proportion to their thickness, rather crooked, and from ten to twelve or even more feet in circumference. The whole tree has much the appearance of a fine old oak. I saw about twenty of them, besides which many have been cut down for the wood, nor could I learn that any attempts had been made to procure *Camphire* from them; though the owner, Mynheer De Vos says, he has often observed minute whitish grains amongst the fibres of the wood, but knew not what they were, and paid no attention to them. Many young trees and plants are to be found in the neighbourhood. They all seem perfectly at home. M. De Vos would certainly find it worth his while to cut up into chips every refuse piece, and sublime, or distil it with water in an iron retort, covered with an earthen, or wooden head, in the cavity whereof hay or straw should be put to which the *Camphor* as it rises would adhere. See *Kæmp. Amoen. p.* 772. *Thunberg*, &c. authors who have written on the subject.

The *Leaves* are alternate, petioled, ovate, and oblong-lanceolate, smooth, entire, pointed, triple-nerved, the nerves less regularly disposed than in any of the other species, and vanishing about the middle of the leaf; they are from three to four inches long including the petiole, which is from a third to a fourth of the whole.

Stipules none. *Panicles* axillary, solitary, about as long as the leaves, and composed of small, alternate, corymbiform ramifications. *Flowers* numerous, all hermaphrodite that I have examined, small, of a pale greenish yellow. *Bractes* small, caducous. *Corol, nectarial glands, stamina, pistil* and *berry* exactly as in L. *Cinnamomum*. See the description thereof.

The alternate leaves, and alternate ramifications of

the panicles, immediately distinguish this species from all the others I have yet met with.

This is far removed from the famous camphor tree of Sumatra, which is a Shorea.

Laurus camphorifera. Kœmpf. Amoen. 770. *t.* 771.

Leaves alternate, oblong, ventricose, acuminate, subtriple-nerved, with glands in their axils. *Racemes* axillary, nectarial glands conglobate.

This slow growing, handsome tree, is a native of the Malay Islands, and was introduced into the Botanic garden at Calcutta in 1802; now 1810, the largest of many individuals is only eight or ten feet high, clothed with spreading branches down to the ground. They now begin to blossom in April.

Trunk in our young trees short, variously bent, dividing into many, far expanding, ramous branches. *Bark* of the oldest woody parts rather scabrous; of the *young shoots* smooth, polished, glaucous-green. *Leaves* alternate, no tendency toward being opposite, petioled, of an ovate, oblong-ventricose shape, entire, waved, tapering at the apex to a long sharp point, while young, of a soft, when old, of a firm, or rather hard texture, of a polished deep green above, glaucous underneath, somewhat triple-nerved, and in the axils of the nerves little glands, as mentioned by the accurate Kœmpfer; from two to four inches long. In this species they are particularly permanent, and what is uncommon in these countries, scaly conical buds are formed. The leaves, bark, and succulent parts smell strongly of camphor when bruised. *Petioles* slender, channelled, scarcely an inch long. *Racemes* axillary, short, and as yet simple, and bearing but very few, subopposite, small whitish, pedicelled flowers. *Bractes* minute, and caducous. *Calyx* and *Stamina* as in the genus. *Nectarial glands* three which (as in all the other species of *Laurus* described by me,) are alternate with the inner three fila-

ments, sessile, conglobate, and yellow. The other three pairs are small, and attached laterally to the very base of the inner three filaments. *Stamina* as in the other species. *Germ* superior, ovate, one-celled, containing one seed, attached to the top of the cell. *Style* about as long as the stamina. *Stigma* three-lobed. *Berry* sub-globular, size and colour of a black currant. *Seed* solitary. *Embryo* inverse, without perisperm, &c. as in the genus.

11. L. *glaucescens. R.*

Leaves alternate, narrow-lanceolate, triple-nerved. *Flowers* in lateral fascicles.

A native of the northern Circar mountains, behind Rajamundree.

Laurus sylvestris. B. H.

Arboreous. *Leaves* alternate, lanceolar, acuminate, one-nerved. *Panicles* terminal, tomentose (with a tomentose scaly bud in the centre.) *Nectarial glands,* broad-cordate-sagittate. *Berries* spherical.

Orook, the vernacular name in Silhet, where it is indigenous, growing to the size of the mango tree. It flowers in February, and the seed ripens in April and May. The timber of this tree is made use of by the natives for various economical purposes.

Leaves alternate, short-petioled, broad-lanceolar, and though acuminate, tapering most toward the base, entire, smooth on both sides, but glaucous underneath ; (no tendency to the tri or triple-nerve habit,) from three to six inches long, and two broad. *Stipules* none. *Panicles* terminal, several, round a terminal scaly tomentose bud, the length of the leaves, having every part amply clothed with soft, light-brown pubescence, and composed of alternate, dichotomous branches ; each division three-flowered, and one in the fork. *Bractes* small, villous, caducous. *Calyx* six-cleft. *Segments* oblong, villous on both sides, permanent. *Nectarial glands* with short fila-

ments, and broad-sagittate-cordate heads. *Stamina* as in the genus, viz. six forming the exterior series, with the side of the anthers containing the four poleniferous pits facing the stigma; the inner three with their anthers reversed; (i. e. the four poleniferous pits facing outward. *Germ* ovate, one-celled, containing one *ovula* attached to the top of the cell. *Style* shorter than the stamina. *Stigma* small, and obscurely three-toothed. *Berries* round, &c. in size and appearance much like a large black currant. *Seed* solitary, round, &c. as in the genus.

12. L. *porrecta. R.*

Leaves alternate, oblong, veined, glaucous underneath. *Panicles* lateral. *Nectarial glands* sagittate. *Stigma* three-toothed. *Berries* round.

Cayoo-gaddees. *Marsden's Sumatra, p.* 129.

A native of Sumatra. From thence Dr. Charles Campbell sent plants to the Botanic garden at Calcutta, where after seven years they blossomed during the cool months of December and January, and ripened their berries in May. *Roots*, the ligneous parts very much like sassafras, and possessing the same pleasant, sweetish, aromatic taste and fragrance. *Trunk* straight to the top of the tree, and clothed with numerous branches to the base; the lower ones reclinate, with their extremities ascending, the superior ones expanding. *Bark* on the trunk, and old branches, of a brownish ash-colour, and somewhat scabrous; on the young ones smooth and green; height of the tree, in seven years, about twenty feet. *Leaves* alternate, petioled, veined,* permanent, oblong, entire, generally acuminate, firm, both sides smooth, the upper polished, the under glaucous, from three to six inches long, and from two to three broad. *Petioles* about an inch long, channelled,

* The *trinerve* or *triple-nerve* habit, so general amongst our East India *Lauri* is not found in this species.

smooth and slender. *Panicles* lateral, scattered round the base of the young shoots, below their tender foliage, solitary, long-peduncled, expanding, small, composed of a few, nearly diverging branchlets. *Flowers* numerous, pedicelled, small, pale yellow. *Bractes* few, minute, caducous. *Calyx* with border divided into six alternately rather smaller, oblong, obtuse, expanding segments, which are somewhat hairy on the inside. *Nectarial glands* three, with sagittate yellow heads, alternate, with the inner three stamina, and three pair on their filaments, immediately below the anthers. *Filaments* nine; six in the exterior series, inserted on the base of the divisions of the calyx, and three on the inner inserted with the sagittate nectarial glands, round the mouth of its tube. *Anthers* oval, with four poliniferous, lidded pits, on the inside of the exterior series, and four on the inside of the inner. *Germ* superior, ovate, one-celled, with one *seed* attached to the top of the cell. *Style* short. *Stigma* three-toothed. *Berry* globular, the size of a small black currant, smooth, when ripe succulent, and of a dark purple colour, the pulp smells exactly like the fresh skin of a green orange, one-celled. *Seed* solitary, round. *Integuments* two; the *exterior* one rather hard, and dark brown; the *interior* one membranaceous, and adhering to the cotyledons. *Perisperm* none. *Embryo* inverse. *Cotyledons* semispherical. *Plumula* two, lobate. *Radicle* ovate, superior.

13. L. *lanceolaria. R.*

Arboreous, every part glossy. *Leaves* alternate, lanceolar, acuminate, one-nerved. *Panicles* axillary, and round the base of the young shoots. *Berries* oblong.

Sundhigool, the vernacular name in Silhet where it is indigenous. It grows to be a middling sized tree, the wood of which the natives convert into various useful purposes.

Flowering time April; the fruit ripens in the rains.

Branchlets crowded, or subverticillated, smooth, clouded. *Leaves* alternate, petioled, lanceolar, tapering equally at each end, acuminate, one-nerved, entire, shining; from four to six inches long, and from one to one and a half broad. *Panicles* axillary, and round the base of the young shoots, from the axils of the scales which formed the bud of the shoot, and also from the axils of the leaves of the shoots, long peduncled, small, smooth. *Bractes*, the inferior ones like the leaves, but small, those of the subdivisions linear. *Flowers* numerous, small, pale yellow. *Calyx* six-parted. *Segments* oval, smooth. *Stamina* as in the genus. *Nectarial glands* broad, cordate-sagittate, their pedicles hairy on the inside. *Germ* ovate, one-celled, containing one *ovula* attached to the top of the cell. *Style* cylindric. *Stigma* three-lobed. *Berries* oblong, succulent, smooth, black, one-celled, &c. as in the genus.

14. L. *villosa. R.*

Arboreous. *Leaves* alternate, petioled, lanceolar, one-nerved. *Panicles* axillary and round the base of the young downy shoots, villous. *Berries* spherical.

A large tree, a native of the forests of Chittagong, where it blossoms in January.

Trunk in full grown trees in their native soil, from four to five feet in circumference and covered with scabrous, dark brown *bark;* young tender *shoots* tomentose, but becoming smooth by the second year. *Leaves* alternate, petioled, lanceolar, entire, one-nerved, obtuse-pointed, when they first begin to expand soft and very downy, like the twigs that bear them, but soon becoming hard and somewhat glossy; from four to six inches long, and from one and a half to two broad. *Panicles* axillary, and round the base of the young shoots, copious, the length of the leaves, very ramous, and very downy. *Bractes* small, downy. *Calyx, stamina* and *germ* as in the genus, permanent. *Nectarial*

glands pedicelled, triangularly sagittate. *Berries* spherical, of the size and appearance of a black currant. *Seeds* and *Embryo* as in the genus.

15. L. *bilocularis*. R.

Arboreous, with a straight trunk, and many, far-extended branches. *Leaves* opposite, and alternate, broad-lanceolar, veined. *Racemes* solitary under the leaves, or axillary. *Filaments* without glands. *Nectaries* nine. *Anthers* bilocular. *Berries* oblong, glaucous.

A native of the country about Tippera, from thence Stephen Harris, Esq. sent plants to the Botanic garden at Calcutta in 1797, where at the age of ten years, they blossomed in March, and the fruit ripened in June.

Trunk straight. In trees thirteen years old, two feet in circumference four feet from the root, covered with smooth, ash-coloured bark. *Branches* very numerous, and spreading horizontally to a great extent, forming a large, uncommonly dense, broad-ovate shady head; *young shoots* round and smooth, green on the side most remote from the sun, and purplish on the other. *Leaves* opposite and alternate, petioled, veined, broad-lanceolar, often unequal at the base, entire, obtuse-pointed, smooth on both sides; about six inches long and two broad, deciduous during the cold season, and appearing with the flowers in March. *Petioles* one-sixth or one-eighth the length of the leaves, round, smooth. *Peduncles* axillary and from the base of the young shoots below the tender leaves, solitary, scarcely so long as the petioles, round, a little villous, bearing a few, viz. from six to twelve, small pedicelled pretty yellow flowers, in form of a raceme. *Bractes* one under the insertion of each pedicel, ovate, caducous. *Calyx* of six oblong, villous, expanding segments, &c. as in all the other species examined by me. *Corol* none. *Filaments* nine, six in the outer series and three in the inner, all without glands. *Anthers* oblong-ovate, bilo-

cular, that is with only one oblong, polleniferous pit on each side, as in *Cassyta*, this species differing from all I have yet met with, the rest having two pits on each side. *Nectarial glands* nine, all pedicelled; six alternate, with the six exterior stamina, with larger, and more rounded heads, and three alternate with the inner three, and of a cordate-sagittate shape, all yellow and fleshy. *Germ* ovate, one-celled, with one seed attached to the top of the cell. *Style* straight, length of the filaments. *Stigma* somewhat three-cornered. *Berries* oblong, as thick as the largest olive and considerably longer, being about two inches long, and one in diameter, smooth, when ripe a deep dark purple, covered with much whitish-grey bloom which easily rubs off. *Pulp* pale yellow. *Seed* solitary, conform to the berry. *Integument* somewhat nuciform, and lined with a thin membrane. *Perisperm* none. *Embryo* inverse. *Cotyledons* conform to the seed. *Plumule* of two minute lobes. *Radicle* roundish, superior.

ANACARDIUM. Schreb. gen. n. 1582.

Calyx five-parted. *Petals* five, reflexed. *Germ* superior, one-celled, one-seeded, attachment lateral. *Nut* reniform, resting on a fleshy receptacle. *Embryo* erect, without perisperm.

1. A. *occidentale. Willd.* 2. 486.
Kapa mava. *Rheed. Mal.* 3. *t.* 54.
Cassuvium. *Rumph. Amb.* 1. *t.* 69.
Hind. and *Beng.* Hijulee-budam.
Acajuba occidentalis, *Gœrt. sem.* 1. 192. *t.* 40. *f.* 2.

A tree common in the East and West Indies. In the former it is found in the vicinity of the sea only, where the soil is almost perfect sand. Flowering time March and April.

Trunk short, thick and very crooked. *Bark* considerably rough, and in old trees deeply cracked. *Branches* numerous, spreading in every direction to a great extent. *Young shoots* round, and smooth. *Leaves* alternate, rather short, petioled, obovate, with a rounded or emarginate apex; smooth on both sides and of a hard texture, from four to eight inches long. *Panicles* terminal, bearing both barren and fertile hermaphrodite flowers intimately intermixed, small, and of the same size and external appearance. There may be trees which produce barren flowers only. *Bractes* gibbous, lanceolate. *Calyx* inferior, five-cleft nearly to the base; *divisions* oblong, conic, acute, and pretty smooth. *Petals* five, linear-lanceolate, revolute, of a pale yellow colour, with longitudinal pink stripes. *Filaments* generally nine, united at the base into a ring round the germ, one of them particularly in the sterile flowers, more than double the length of the others. *Anthers*, they appear to be all fertile, that of the major filament larger. *Germ* in the barren flowers minute, with a very short style, in the fertile flowers obliquely obcordate; one-celled, with one reniform seed attached to the side of its cell. *Style* long, becoming convolute, as if to bring the simple *stigma* into contact with the large anther of the long filament. *Fruit* as described and figured, by *Gœrt. vol.* 1. 192. *t.* 40.

2. A. *dubium. R.*

A native of Sumatra, and said to be a large and beautiful tree.

Branchlets round, and smooth. *Leaves* alternate, short-petioled, lanceolate, entire, smooth, from four to six inches long, and about two broad. *Stipules* none. *Panicles* terminal, thin, pretty large, and composed of a few, alternate, compound, and simple corymbiferous ramifications. *Flowers* numerous and small. *Calyx* inferior, one-leaved, bifid. *Segments* rounded. *Petals*

four, five, or six, (five most common,) inserted round the middle of the clavate receptacle which elevates them, the stamina and pistil above the calyx linear-lanceolar. *Filaments* four, five, or six, corresponding with the number of petals, inserted on the receptacle below the germ, rather shorter than the corol. *Anthers* oblong. *Germ* obliquely obcordate, one-celled, containing one ovula attached to the upper part of the cell a little to one side, and immediately under the insertion of the long curved *style*. *Stigma* simple.

CASSYTA.

Calyx three-leaved. *Corol* three-petalled. *Filaments* petaliform ; the inner three with glands at the base. *Nectarial glands* three, alternate with the appendaged filaments. *Drupe* inferior, one-seeded.

C. *filiformis. Willd.* 2. 487.
Filiform, lax, leafless.
Acatsja valli. *Rheed. Mal.* 7. *t.* 44.
Sans. Akashavuli.
Teling. Paunch tiga.

A thread-like leafless parasitic plant, found growing on, and twisting round the branches of trees, &c. in almost every part of the Coast and in Bengal.

Spikes lateral, ascending. *Flowers* small, white, rather remote. *Bractes* three-fold, embracing the fructification, like a calyx, and only a little less than it. *Calyx* three-leaved ; *leaflets* very small, round, permanent. *Corol ; petals* three, oblong, many times larger than the calyx. *Nectary* (I call what have been termed filaments such) composed of nine, *stameniferous* leaflets and nine glands ; the leaflets stand in three *series*, those of the *exterior series* are clubbed, lying immediately over the petals, and rather shorter than they are ; on the inside near the

apex are two oval pits, where the stamens are lodged till they are ripe, the second and largest *series* oblong, standing alternate with the petals, length of the *exterior series*, and having their stameniferous pits the same; *inner* or third series the smallest, each augmented with two yellow glands at the sides of the base, swelling out over these glands, and then tapering to an obtuse point; the stameniferous pits are here on the outside. The three remaining glands are cordate, pointed, standing alternate with the inner series, embracing immediately the germ. *Filaments* nine pair, most minute, inserted into the upper margins of the pits of the nine leaflets of the nectary. *Anthers* small, oval, when ripe they spring with a jerk from their enclosures and stand erect, or spreading upon their little filaments.

Style short. *Stigma* entire. *Nut* round, covered by the increased receptacle.

ENNEANDRIA HEXAGYNIA.

BUTOMUS. Schreb. gen. N. 693.

Calyx none. *Petals* six. *Capsules* six, many-seeded.

B. *lanceolatus. R.*

Leaves radical, long-petioled, lanceolate. Scape as long as the leaves, bearing from six to twelve long pedicelled flowers in an upright umbel.

Found by Dr. Buchanan, in the Eastern parts of Bengal.

CLASS X.

DECANDRIA MONOGYNIA.

SOPHORA. Schreb. gen. N. 694.

Calyx gibbous, five-toothed. *Corol* papilionaceous, wings length of the vexillum. *Legume* necklace-shaped.

1. S. *tomentosa. Willd.* 2. 500.

Shrubby. *Leaves* pinnate; *leaflets* about eight pair, between alternate and opposite, ovate, obtuse, hoary underneath. *Legume* necklace-shaped.

This large shrub, or small tree, is so far as I can learn, a native of Ceylon. From thence it was introduced into the Botanic garden at Calcutta in 1798, by Dr. A. Berry. Flowering time in Bengal the rainy season.

Trunk erect, with expanding branches. *Bark* of the old woody parts somewhat scabrous, of the young shoots hairy. *Leaves* alternate, pinnate, from six to ten inches long. *Leaflets* about eight pair, short-petioled, neither alternate nor opposite but between the two; ovate, obtuse, entire, of a firm texture, smooth above and hoary underneath; from an inch to an inch and a half long, and about one broad. *Petioles* and *petiolets* round, and villous. *Stipules* none. *Racemes* terminal. *Flowers* numerous, generally single, bright yellow, fragrant. *Bractes* solitary, one-flowered, caducous. *Calyx* villous, of a short urceolate shape, with the margin slightly five-toothed, and incurved. *Corol* papilionaceous. *Legume* necklace-shaped, villous, composed of about five or six nearly round protuberances, with a single, round, brown, smooth seed in each.

PODALYRIA. Lamark.

Calyx five-toothed. *Corol* papilionaceous. *Legume* ventricose, few, or many-seeded.

P. *bracteata. R.*

Shrubby. *Leaves* simple, oval. *Peduncles* axillary, once or twice bifid; ultimate divisions flowered, with a pair of large, opposite, roundish, many-nerved bractes, hiding the calyx, and a similar pair at the forks of the peduncles.

Gopoori, the vernacular name in the Silhet district, where it is found indigenous in the forests, growing to the size of a large bushy shrub. Flowering in May and June, and the seeds ripening in December and January.

Tender shoots columnar, and clothed with a few thinly scattered hairs. *Leaves* alternate, bifarious, petioled, oval, entire, obtuse, smooth, and beautifully reticulated with slender veins; from three to six inches long, and from two to four broad. *Petioles* from half an inch, to an inch and a half long, a little hairy. *Stipules* ovate, many-nerved. *Peduncles* axillary, solitary, once or twice bifid, each ultimate division, one-flowered. *Bractes* in pairs at the divisions of the peduncles, one pair the largest, embracing each flower; all round, or oval, and many-nerved. *Flowers* large, white, perfectly papilionaceous. *Calyx* bowl-shaped, hairy on the outside. *Mouth* unequally five-toothed, caducous. *Banner* very broad, deeply emarginate, short-clawed. *Wings* falcate, obtuse, five-clawed, the length of the banner, *keel* two-petalled, their lower margins united, of the length and shape of the wings. *Filaments* ten, distinct to their insertion into the receptacle round the base of the germ, subulate, smooth, nearly as long as the pistillum, ascending in a gentle curve. *Anthers* ovate, oblong, erect. *Germ* lanceolate, smooth, one-celled, containing three ovula attached to the upper margin. *Style* subulate. *Stigma* acute. *Legumes* ob-

liquely oblong, tapering equally at each end, with the apex acuminate, and somewhat recurved, one-celled, two-valved, smooth, on the outside dark brown, within pretty and whitish, from three to four inches long and one and a half broad. *Seeds* two, or three, large, and very unequal, of a dark brown colour. *Perisperm* none. *Embryo* as in other *Leguminosæ*.

BAUHINIA.

Calyx a spathaceous border or tubular base. *Corol* irregular, five-petalled, expanding. *Anthers* incumbent, bursting longitudinally on their sides.

SECT. I. *Trees or Shrubs.*

1. B. *candida. Willd.* 2. 510.

Arboreous. *Leaves* roundish, downy underneath. *Lobes* obtuse. *Panicles* terminal. *Segments* five, all fertile. *Legume* linear.

Sans. Kuvidara, also Yooga-putra, double-leaved.

Hind. Kana-raja.

A small handsome tree. I have only found it in gardens, where it flowers about the beginning of the hot season.

Leaves alternate, petioled, nearly bifarious suborbicular, two-lobed, from nine to eleven-nerved, the middle one ending in a villous bristle between the lobes, below downy; *lobes* oval, obtuse, or very obtusely-pointed; the whole leaf is from three to five inches each way. *Racemes* axillary, and terminal, those of the axils small and simple, the terminal ones large, compound, or panicled. *Flowers* numerous, white, large, delightfully fragrant. *Calyx* spathiform, leathery, not gaping at the base, splitting longitudinally on the under side; *apex* minutely five-toothed. *Filaments* five, ascending, the uppermost smallest. *Anthers* linear, incumbent; there are no ste-

rile filaments in this species. *Germ* long-pedicelled. *Style* short, ascending. *Legume* linear, compressed smooth, many-seeded.

2. B. *variegata. Willd.* 2.

Arboreous. *Leaves* smooth, subrotund with obtuse lobes. *Racemes* terminal and axillary. *Petals* broad-cuneiform, with waved margins. *Stamens* five, all fertile. *Legume* linear.

Chovanna mandaru. *Rheed. Mal.* 1. *p.* 57. *t.* 32.

Sans. Kuvidara.

Beng. Ructa-kanchun.

It is one of the most stately of the genus, growing to be a tree of considerable size ; I have only found it in gardens ; where it is indigenous I cannot say. Flowering time the month of February and March, the seed ripens in April and May.

Trunk tolerably erect, often as thick as a man's body. *Bark* dark ash-coloured and pretty smooth. *Branches* numerous, spreading in every direction, with smooth ash-coloured bark. *Leaves* subifarious, petioled, suborbicular, two-lobed ; *lobes* obtuse, smooth above, somewhat villous underneath, from two to three inches each way. *Racemes* terminal, few-flowered. *Peduncles* clavate, round, villous. *Bractes* small, caducous. *Flowers* large, of a lively reddish purple. *Calyx* spathiform. *Petals* unilateral, pairs equal, and oblong, with somewhat curled margins ; the upper one is broader, more deeply coloured, and with a longer channelled claw. *Stamina* five, all fertile, sometimes there are the minute rudiments of from one to five abortive-filaments between them. *Legume* straight, linear, compressed, acuminate, pedicelled. *Seeds* from six to twelve, approximate, or often with the anterior edge of one resting over the posterior edge of its neighbour.

This tree can only be said to differ from B. *candida,*

in the colour of the flowers; had I met with this first, I should certainly have considered the other as a variety only.

3. B. *purpurea. Willd.* 2. 511.

Arboreous. *Leaves* smooth; *lobes* obtuse. *Filaments* ten, of which three or four are large and fertile. *Panicles* terminal. *Legumes* linear.

Chovanna-mandaru. *Rheed. Mal.* 1. *t.* 33.

Hind. Sona.

Beng. Deva-kanchun.

This I have not only found in gardens, but also wild on the mountains, where it grows to be a large tree.

Leaves alternate, petioled, nearly bifarious, smooth on both sides, from nine to eleven-nerved; the middle one ending between the lobes in a bristle; lobes oblong, obtuse, the whole from five to six inches long, and from four to five broad. *Panicles* terminal, ascending, composed of racemes, similar to, though larger than those of B. *candida*. *Bractes*, one embracing the insertion of the pedicel, and two pressing the calyx laterally. *Flowers* numerous, of a deep rose colour, very large. *Calyx* generally splits into two; *divisions* reflexed, the lower one is generally emarginate, and the upper one three-toothed. *Petals* lanceolate, waved. *Stamens* three or four, large with fertile anthers and six or seven small sterile filaments.

4. B. *triandra. R.*

Arboreous. *Leaves* smooth, subrotund, with lobes obtuse. *Racemes* terminal and axillary. *Petals* cuneiform, obtuse, long-clawed, margins waved, and curled. *Fertile stamina* three. *Legume* linear, many-seeded.

A native of Bengal. In the Botanic garden at Calcutta, it blossoms in October and November, the seed ripens in March.

Trunk straight, and of considerable size. *Branches* few.

with smooth brown *bark*. *Leaves* alternate, petioled, sub-orbicular, two-lobed, having the *lobes* obtuse, entire, and smooth on both sides, about three inches long and four broad, the whole leaf being nearly the same. *Petioles* round, smooth, swelled at each end, length about one-third of the leaves. *Racemes* terminal or axillary, rarely opposite to the leaves. *Calyx* spathiform, &c. as in the other species. *Petioles* cuneiform, obtuse, with the margins waved and curled, three of them forming as it were an upper, and the other two the under lip of the corol. *Filaments* ten, of which three only are of the length of the pistil, and bear fertile anthers, the other seven very small and without the least vestige of an anther. *Legume* somewhat sickle-shaped, linear, smooth, from six to twelve inches long. *Seeds* remote, flat, round, from eight to sixteen in each legume.

This when in flowers, is one of the most beautiful species of Bauhinia I have yet met with, and as it blossoms when so low as three feet, and when not more than one year old, is particularly well adapted for the conservatory. It comes nearest to *purpurea* in the parts of fructification.

5. B. *malabarica. R.*

Arboreous. *Leaves* transversely broad, oval, smooth, nine-nerved, slightly two-lobed; *lobes* rounded. *Racemes* axillary, corymbiform, sessile; *calyx* and *corol* regular; *stamina* ten, all fertile.

A pretty large tree, a native of Malabar, in the Botanic garden at Calcutta, young trees four or five years old from the seed, are about twenty feet high, their stems about as thick as a man's thigh; *coma* very ramous, with its numerous, smooth, slender, flexuose branchlets, drooping. It begins to blossom in October and November. This very distinct species is remarkable for the regularity of its five-parted calyx, and equally disposed, equal petals.

6. B. *retusa. R.*

Arboreous. *Leaves* roundish, reniform, from two-lobed to scarcely emarginate. *Panicles* terminal. *Petals* roundish. *Stamens* three, all fertile. *Legume* oblong, from five to six-seeded.

I found this species in the Company's Botanic garden at Calcutta, but could never learn from whence it was brought. The trees are about twenty years old. Flowering time September; the seed ripens in March.

Trunk short and thick, but rarely straight. *Branches* spreading, with long, slender, waving, pendulous branchlets. *Bark* pretty smooth, rust coloured. *Leaves* bifarious, alternate petioled, round-reniform; from two lobed, to slightly emarginate, with a bristle in the notch, from seven to eleven-nerved, smooth on both sides, dimensions from three to six inches each way. *Panicles* terminal, and axillary, composed of many corymbiform racemes; the ramifications a little villous. *Flowers* numerous, small, pale yellow, beautifully marked with numerous, small, purple spots. *Filaments* three, from the under side, nearly as long as the pistil, ascending, they are all fertile. On the upper side of the large woolly receptacle into which these and the pistil are inserted, are two large, yellow, bristle-pointed, smooth glands, with smaller brownish ones, intermixed; some, or all of these have also a little bristle issuing from them. *Pistillum* when the flowers first expand, and for sometime afterwards recurved, as if to place the *stigma* below the anthers; afterwards it becomes incurved like the stamens, and in that situation the *stigma* is higher than the anther. *Legume* linear-oblong, with the apex rounded, flat, smooth, about six inches long, and two broad. *Seed* from four to eight in the legume, obovate, much compressed, smooth and of a dark brown colour.

From wounds made in the bark a brownish mild gum, like that of the cherry tree, is produced.

7. B. *parviflora. Willd.* 2. 509.

Arboreous. *Branchlets* drooping. *Leaves* subreniform, deeply two-lobed; *lobes* obtuse. *Racemes* solitary. *Stamens* ten, all fertile. *Legume* linear, ligneous, many-seeded.

Sans. V*una*-raja.

Tam. Areka-marum.

Teling. Arro.

A small, uncommonly crooked bushy tree; a native of most forests on the coast of Coromandel. *Bark* dark and scabrous.

Leaves alternate, petioled, two-lobed, somewhat downy; *lobes* oblong, rounded at both ends; size various, the whole leaf generally about two inches broad, and not quite so long. *Petioles* round, downy. *Racemes* simple, terminal, or leaf-opposed. *Flowers* scattered, pretty large, yellow. *Calyx* spathiform, bursting on the under side, reflected, not gaping at the base. *Petals* and *stamens* ascending. *Anthers* fertile on all the ten filaments. *Legume* scimitar-shaped, very hard, not opening, interrupted. *Seeds* from ten to twenty, oval, smooth, shining, brown. Matchlock men make their matches of the bark of this tree; it burns long, and slowly, without the help of salt-petre or any other combustible. To prepare the bark it is boiled, dried, and beat. Ropes are also made of the inner rind, which is fibrous, strong and durable.

8. B. *tomentosa. Willd.* 2. 511.

Shrubby. *Leaves* roundish, deeply two-lobed, villous underneath. *Stipules* setaceous. *Peduncles* leaf-opposed, two-flowered. *Petals* oval. *Stamina* ten, all fertile. *Legume* lanceolate, villous.

Canschena-pou. *Rheed. Mal.* 1. *t.* 35.

A native of Malabar, Coromandel mountains, &c. In the Botanic garden at Calcutta, it is in blossom most part of the year.

Trunk straight. *Branches* numerous, forming a close, handsome, large shrub. *Bark* ash-coloured; *young shoots* villous; the general height about ten feet, I mean of large plants. *Leaves* alternate, bifarious, petioled, roundish, deeply two-lobed, with a minute bristle between; *lobes* roundish, villous underneath. *Stipules* filiform, villous. *Peduncles* solitary, nearly opposite to the leaves, two-cleft, two-flowered. *Flowers* large, of a pale sulphur colour, drooping. *Bractes* three on the outside of the base of each pedicel. *Petals* oval, the upper one smaller, and in some plants marked on the inside, with an oblong deep purple spot. *Filaments* ten, ascending, the length of the pistillum. *Anthers* ten, all fertile. *Legume* lanceolate, villous, from five to six-seeded.

9. B. *acuminata. Willd.* 2. 511.

Shrubby. *Leaves* with lobes somewhat pointed. *Racemes* laterifolius, and terminal. *Stamens* ten, alternate by shorter. *Legumes* lanceolate.

Velutta-mandaru. *Rheed. Mal.* 1. *p.* 61. *t.* 34.

Beng. Canchun.

Hind. Cuchunar.

It is a small, ramous tree, or large shrub; whole height from eight to ten feet. It is in flower most part of the year.

Trunk scarcely any, but many large branches spread in every direction; *bark* greyish brown. *Leaves* alternate, bifarious, petioled; two-lobed, nine-nerved, the middle nerve ends in a short bristle between the lobes; smooth above, downy underneath; *lobes* oblong, somewhat pointed; from two to four inches long. *Petioles* channelled, swelled, and jointed at the base, downy, one inch long. *Stipules* half-lanced, very acute. *Flowers* racemed, large, pure white, inodorous. *Racemes* solitary, laterifolious, or terminal, short, few-flowered. *Bractes* a small pointed one below each pedicel, with two or more scattered among the

pedicels. *Calyx* above, tapering to a long, fine point. *Corol* regular; *petals* expanding, oblong, concave, obtuse. *Filaments* ten, ascending, five are larger, more spreading than and alternate with the five shorter ones. *Anthers* equal. *Legume* obliquely linear-lanceolate; upper margin three-keeled. *Seeds* from eight to twelve.

Note. The pistillum is often minute, and abortive. This species differs from *candida* in being rarely more than a shrub; in having the lobes of the leaves pointed, and inodorous. *Flowers* with ten fertile stamens. It is a very specious plant, well deserving a place in the gardens of the curious.

SECT. II. *Scandent.*

10. B. *racemosa. Vahl. symbol.* 3. *p.* 56. *t.* 62. *Willd.* 2. 509.

Scandent, and of immense extent. Tendrils opposite. *Leaves* subrotund; *lobes* obtuse, downy. *Racemes* corymbiform, terminal. *Stamina* five, three of them fertile. *Legume* linear, ligneous, very downy.

Hind. Mahwal.

Nap. Boila.

Teling. Adda.

The largest and most extensive creeper I have seen. It is a native of the mountainous parts all over India, where it runs over the highest trees.

Trunk often as thick as a child's waist when only ten years old. *Bark* brown and rough. *Branches* very extensive, I may say from one to three hundred feet; *young shoots* covered with remarkably soft down. *Leaves* remarkably large, alternate, petioled, two-lobed; *lobes* rounded at both ends, downy with a middle nerve, ending in a soft bristle between the lobes; size often a foot each way. *Petioles* round, downy. *Tendrils* opposite below.

the leaves, woody, very strong, simple. *Racemes* terminal corymbiform. *Peduncles* round, downy, not very long, as the flowers grow near each other. *Pedicels* about two inches long, thickened near the apex, jointed, and have there two small lanceolate bractes; besides a downy, narrow-lanceolate one below each pedicel. *Flowers* pretty large, when they first open white, but gradually becoming yellow. *Calyx* spathiform, on a tubular base. *Corol,* the superior petals larger, the inferior more distant. *Filaments* on the upper side of the germ three, nearly as long as the petals, ascending, bearing oblong, incumbent anthers; on the under side two or three very small, and without anthers. *Germ* oblong, sessile, downy. *Style* subulate, rather shorter than the filaments. *Stigma* headed. *Legume* pendulous, about twelve or eighteen inches long, and from two and a half to three broad, compressed, woody, covered with much, dark brown, soft velvet-like down. *Seeds* from eight to twelve, orbicular, flat, smooth, brown, about an inch in diameter, and one-sixth of an inch thick. They are eaten raw, when ripe, the taste is like that of *Cashew-nuts*.

The leaves are employed to line baskets, and various other sorts of packages by the hill people, where the plant grows for which they are well adapted not only on account of their great size, but also on account of their being remarkably firm, tough, and durable.

11. B. *scandens*. *Willd*. 2. 58.

Scandent. *Tendrils* opposite. *Leaves* round cordate, apex two-lobed. *Racemes* terminal, simple, or ramous. *Flowers* triandrous. *Legumes* linear, from four to five-seeded.

Folium linguæ. *Rumph. Amb*. 5. *p*. 1. *t*. 1.

Gund*a*-gilla the vernacular name in Silhet, where it is indigenous in the forests of that province, running up,

and over trees of the first magnitude. Flowering in April and the seed ripening in October.

Branchlets very long, flexuose, sending forth from each knee, a small tendril-bearing floriferous twig. The tendrils are generally opposite, slender, flattened and simple. *Leaves* alternate, long-petioled, round-cordate, apex divided into two lobes, by an open gape; some few are found perfectly entire, smooth on both sides, general size from three to five inches each way. *Racemes* terminal, sometimes ramous, but far more frequently simple, covered with much brown sericeous pubescence. *Flowers* rather small for a *Bauhinia*, alternate, solitary, long pedicelled. *Bractes* acuminate, one under each pedicel, sericeous. *Calyx* clavate, sericeous, having the *mouth* divided into five, small, rounded segments. *Petals* five, nearly equal, orbicular, short-clawed, densely clothed with much soft, ferruginous grey-down. *Filaments* three, ascending, longer than the pistillum. *Anthers* incumbent. *Germ* short-pedicelled, linear, densely clothed with ferruginous down, one-celled; *ovula* from five to six. *Style* rather short. *Stigma* capitate. *Legume* linear-oblong, dark brown, somewhat villous, from four to six inches long, and two broad. *Seeds* about two, nearly orbicular, or a little compressed, smooth, of a dark brownish-black, seven-eighths of the margin is surrounded with the eye as in *Carpopogon*; they are the size of a chesnut, and surrounded with a soft, spongy, greyish, yellow substance.

12. B. *piperifolia*. *R.*

Scandent, smooth. *Leaves* entire, cordate, from five to seven-nerved, lucid. *Panicles* terminal. *Legumes* from round to oval, one or two-seeded.

A large scandent species, a native of the mountain forests north of Silhet, where it blossoms about the beginning of the cold season.

13. B. *anguina. R.*

Scandent. *Stem* compressed, flexuose; *flexures* approximate, regularly and alternately concave and convex on the two flat sides. *Leaves* subcordate, smooth, entire, or two-lobed; *lobes* subtriangular, and acuminate. *Panicles* terminal, flowers triandrous. *Legumes* oval, smooth, from one to two-seeded.

Na ga-ma-valle. *Rheed. Mal.* 8. *t.* 30 and 31.

Folium linga. Rumph. Amb. 5. *t.* 1. cannot be this, and to it I have retained the old Linnean specific name *scandens*, though some other might be better, as there are many scandent species now known.

Nag-poot is the vernacular name in Silhet.

This is the most extraordinary as well as one of the most extensive ramblers I have met with. It is a native of the mountainous tracts in the vicinity of Silhet, Chittagong, &c. and the most regularly serpentine pieces of the stems and large branches are carried about by our numerous mendicants, to keep off serpents. Flowering time about the end of the rains, and the seeds ripen in the cool season. *Stems* and large *branches* flat being from four to six inches broad, scarcely half an inch thick, when old the margins become double, like the letter V or T, and pretty straight, whereas the body, or space between them, is most regularly flexuose, with the flexures alternately convex and concave. *Bark* rather rough, and ill defined. Wood hard, but porous, and nearly white. *Branches* and *branchlets* bifarious, and regularly alternate, from the flexuose parts just mentioned. *Tendrils* simple, or bifid, permanent. *Leaves* bifarious, alternate, petioled; on the older plants entire or nearly so, and round-cordate; on young plants; and on the luxuriant shoots, more or less bifid, with the lobes narrow and tapering much to their points; from five to seven-nerved, smooth on both sides, from two to six inches each way. *Panicles* terminal, composed of long, simple racemes, of numerous, very small white flowers. *Calyx*

cup-shaped, unequally five-toothed. *Petals* five, obovate, short-clawed. *Stamina* only three, all fertile. *Germ* short-pedicelled, oblong, inserted on the under margin of a large, two-lobed gland, which occupies the centre of the flowers, one-celled, two-seeded. *Style* short. *Stigma* simple. *Legume* oblong, thin, with the edges even, and the apex a small recurved point, both sides smooth, about two inches long, and one broad, one-celled. *Seeds* one or two, oval, with an obtuse point on the anterior upper part, which is formed by the radicle compressed, smooth. *Integument* in the recent state single. *Perisperm* in considerable quantity in the fresh seed. *Embryo* curved, &c. as in the sides.

14. B. *corymbosa. R.*

Scandent. *Leaves* two-parted ; *lobes* semicordate, obtuse, two or three nerved. *Corymbs* terminal ; *flowers* triandrous ; *petals* spatulate, and curled. *Legumes* linear, from six to twelve-seeded.

This very extensive delicate species, is a native of China ; from thence seeds were sent to the Botanic garden at Calcutta, where in five years the plants raised from them began to blossom abundantly in April, and ripened their seed in the rainy season.

Stem scarcely any thing that deserves the name, but many, long, slender branches, and branchlets, climb and spread in every direction to an extent of many fathoms, running over high trees, &c. *Bark* smooth, that of the old ligneous parts dark-brown ; of the young shoots green, and often coloured. *Tendrils* opposite, simple, short. *Leaves* alternate, bifarious nearly round, smooth, divided for about three-fourths down ; length and breadth about one inch and a half, lobes semicordate, very obtuse, from two to three-nerved. *Stipules* ensiform. *Corymbs* terminal on the short lateral branchlets, short peduncled. *Flowers* of a middling size, white with a faint tinge of

pink, fragrant. *Pedicels* long, jointed at the middle; the upper portion, or rather tube of the calyx clavate. *Bractes* filiform. *Calyx*, here, and I believe in all our Indian species, ought to be described with a long slender tube, and five-parted border. *Petals* five, equal, spatulate, elegantly curled, spreading. *Filaments* from the mouth of the tube of the calyx; three long and fertile, and from two to five small, and abortive. *Anthers* oval, two-lobed. *Germ* linear, curved, smooth, rising on a pedicel, with the three fertile stamina, from the lower edge of the mouth of the tube of the calyx, one-celled; *ovula* many, attached to the upper margin. *Style* short. *Stigma* large. *Legume* thin, from four to five inches long, and three-fourths of an inch broad, smooth, dark brown, from six to twelve-seeded.

15. B. *semibifida. R.*

Scandent. *Leaves* subovate, deeply two-lobed. *Stipules* broad-falcate. *Racemes* terminal. *Calyx* five-leaved. *Petals* oblong, claved. *Stamina* three, with two rudiments. *Legume* flat, smooth, few-seeded.

A native of the Malay Archipelago; from Sumatra it has been introduced into the Botanic garden at Calcutta where it blossoms in October and November; the seeds ripen in April.

Stems and *branches* ligneous, scandent, much bent in various directions. *Bark* of the young shoots clothed with much ferruginous pubescence. *Leaves* bifarious, petioled, subobovate, deeply two-lobed, from seven to nine-nerved; *lobes* linear oblong, obtuse, pretty smooth on both sides; length of the whole leaf from three to five inches, and the breadth from two to four. *Petioles* round, villous, half the length of the leaves. *Stipules* broad-falcate, obtuse. *Tendrils* simple, ligneous, permanent. *Racemes* terminal, erect, solitary, large, many-flowered. *Flowers* white, changing to pale yellow when the stamina drop, pretty large, open-

ing in succession from the base up, fragrant. *Peduncles* and *pedicels* round and clothed with rust coloured down, like the other tender parts; the latter from one to two inches long, ascending; apex clavate, this club or enlargement is hollow, with a perforation from the apex immediately within the attachment of the pedicel of the germ, and as it is common to all, it may very properly be called the tube of the calyx. *Bractes* minute, caducous at an early period. *Calyx* of five linear, thick, fleshy, reflexed, caducous leaflets. *Petals* five oblong; *base* tapering into claws, the exterior two large, the inner one very small. *Filaments* five, the three exterior ones fertile, incurved, shorter than the two longest petals, smooth, white, the two inner ones minute. *Anthers* very large, incumbent. *Germ* short, thick and villous. *Stigma* very large, and clammy. *Legume* sublanceolate, thin, very smooth, of a dark chesnut colour. *Seeds* a few, nearly round, flat, and smooth.

16. B. *ferruginea. R.*

Scandent. *Leaves* subrotund, two-lobed. *Racemes* terminal, solitary. *Tendrils* solitary. *Petals* lanceolate, obtuse, downy on the outside. *Filaments* five, three with anthers, and two sterile.

A very large, woody, scandent species, a native of the Malay Islands, &c. about the straits of Malacca.

17. B. *integrifolia. R.*

Scandent. *Leaves* subrotund, emarginate; floral leaves, cordate, acute. *Corymbs* panicled. *Filaments* five, three with anthers, and two sterile.

A large, woody, climbing species, a native of Pulo Pinang.

Stem, and larger *branches* woody, climbing over trees, &c. *bark* smooth; *young shoots* covered with dark rust-coloured down. *Leaves* alternate, petioled, orbicular, emar-

ginate, otherwise entire, smooth on both sides; from seven to eleven-nerved, size very various. *Floral* leaves cordate, with downy nerves and petioles. *Tendrils* generally axillary, simple, or two-parted. *Corymbs* terminal, and from the exterior axils, numerous, forming large terminal panicles; every part covered with much dark rust-coloured down. *Flowers* very numerous, small, of a pale yellowish colour. *Bractes* solitary, one-flowered, oblong, concave, caducous. *Calyx* with a tubular base. *Border* often divided into five parts. *Petals* oval, subequal, waved, expanding. *Claws* hairy. *Filaments* five, three with anthers, longer than the pistil; two sterile, rather shorter than the petals, and very slender; the whole, with the style, ascend in an elegant curve. *Germ* pedicelled, very hairy, from three to four-seeded, inserted on the lower margin of the mouth of the tube of the calyx. *Stigma* peltate.

18. B. *cordifolia. R.*

Smooth in every part. *Leaves* cordate, from three to five-nerved. *Corymbs* terminal. *Flowers* triandrous, long-pedicelled. *Stigma* peltate.

A native of the Moluccas.

CASSIA. Tourn. Gært.

Calyx five-leaved. *Petals* five, nearly equal. *Filaments* unequal. *Anthers* opening by two slits on the front.

Note. The genus *Cassia*, like many others, is now, more extensive than convenient, I have therefore, with Gærtner separated the lomentaceous species from the leguminous. The former under the old generic name *Cassia* and the latter *Senna.*

The first are trees of great beauty, particularly when in flower, the *leaves* pinnate; no glands on the common *pe-*

tioles but *stipulate* at the base. *Flowers* on axillary racemes. *Calyx* of five equal leaflets. *Corol* of five nearly equal petals. *Stamina* very unequal; the three lower filaments much longer than the rest, with a double curve below the middle, and in two of them, a large swelling at the middle. *Loment* cortical, cylindric, pendulous, many-celled, with one seed in each. *Embryo* straight, furnished with a hard *perisperm*, large, roundish *Cotyledons*, and a centrifugal radicle.

1. C. *fistula. Willd.* 2. *p.* 518.

Leaflets about five pair, ovate oblong. *Racemes* pendulous. *Loment* cylindric, pendulous; partitions lined with soft sweet pulp.

Sans. Soovurnuka.

Beng. Soondali.

Hind. Umultuss.

Teling. Rela.

Conna. *Rheed. Mal.* 1. *t.* 22.

A native of various parts of the East Indies, as well, I presume, as of the west; as young trees reared from West India seed, now ten years old, do not in any respect differ from these of the East, both are now, April, in full flower, and the seeds are ripe about nine, or ten months afterwards.

Trunk short. *Bark* smooth, of a light ash-colour. *Branches* numerous, spreading in every direction; general height of full grown trees from twenty to thirty feet. *Leaves* alternate, bifarious, pinnate, from twelve to eighteen inches long, deciduous in the cool season, and appearing with the blossoms in April. *Leaflets* from four to eight pair, five the most common, opposite or nearly so, short petioletted, the inferior ones broad-ovate, the superior ones oblong, entire, generally obtuse or emarginate, polished on both sides, from two to six inches long and from one and a half to three broad. *Petioles* round, without glands. *Petiolets*

vermicular. *Stipules* minute, conic. *Racemes* pendulous, simple, from one to two feet long. *Flowers* large, bright yellow fragrant, diverging on long slender, smooth pedicels. *Calyx* of five, nearly equal, oval, smooth leaflets, which are much shorter than the corol. *Petals* equal in shape; viz. oval, but differing in size. *Filaments* the three lower much longer than the others and having a double curve, but no swelling, as in some of the other species with cylindric filaments. *Anthers* on the three long filaments oblong, opening by two lines on the face, the other seven clavate, with pores at the small end. *Germ* pedicelled, filiform, smooth, one-celled, containing numerous seeds, which at this period are without any sign of separation, that appearing in the advanced state, attached to the upper margins. *Style* short, incurvate. *Stigma* conic, smooth. *Loment* cylindric, pendulous, &c. as described by the accurate *Gœrtner, vol. 2. p.* 313 *t.* 147.

The tree is uncommonly beautiful when in flower, few surpassing it in the elegance of its numerous long, pendulous racemes of large, bright yellow flowers, intermixed with the young, lively green foliage.

2. C. *rhombifolia. R.*

Leaflets about five-pair, rhombiform, polished. *Racemes* pendulous. *Loment* cylindric, partitions lined with soft bitter pulp.

A native of Ceylon, from thence General Hay Macdowall sent seeds to the Botanic garden at Calcutta in 1802. In six years the plants therefrom have attained to the height of twenty feet. It blossoms during the months of May and June, and the seed ripens in February, March, and April.

Trunk straight. *Bark* light ash-coloured, and smooth. *Branches* spreading, with bark like that of the trunk. *Branchlets* bifarious, flexuose, round, and smooth. Their base often remains, and resembles rude thorns. *Leaves*

alternate, bifarious, pinnate. rather more than a foot long. *Leaflets* from three to seven pair, opposite. short petiolet-ted, tapering equally at both ends, rhombiform, entire, obtuse, polished ; from two to four inches long, and from one to two broad. *Petioles* round, slender, no glands. *Petioles* vermicular. *Racemes* from the leafless branch-lets of the former year, also axillary, solitary, or in fasci-cles, pendulous. *Flowers* large, bright yellow, on long slender diverging pedicels. *Bractes* tern, lanceolate, very early caducous. *Calyx* of five, nearly equal, oblong, ob-tuse, concave, smooth leaflets. *Petals* five, nearly equal, spreading ; oblong, obtuse, concave. *Filaments* the lower three as long as the pistillum. They have a double curve at the base and ascend in a semicircle. *Anthers* on the three long filaments, oblong, and opening in two lines on the face, those of the other seven clavate, with two pores at the small end. *Germ* pedicelled, filiform, smooth, ascending in a semicircular curve, with the three long filaments, one-celled, in which are numerous seeds attached to the upper margin. *Style* short. *Stigma* minute. *Loment* cylindric, pendulous, above two feet long, and scarcely so thick as the little finger, having the sutures sometimes strongly marked with *Cortex* dark brown, smooth, and hard,and the bristle as in C. *fistula*,many-cell-ed,about four in every inch, but not opening spontaneous-ly. *Partitions* lined with soft, black, bitterish pulp. *Seeds* one in each cell, round, obcordate, the size of a small pea. *Integument* simple, hard, and polished. *Perisperm* con-form to the seed, of a bard tough texture, and pale ash-colour, even while fresh. *Embryo* straight, pale yellow. *Cotyledons* nearly round, and so large as to extend to the integument all round, dividing the perisperm. *Plumula* of one pectinate lobe. *Radicle* roundish, immediately within the umbilicus.

It differs from C. *fistula* in the shape of the leaves, more slenderloment, and general habit of the trees.

3. C. *nodosa. Buch.*

Leaves bifarious; *leaflets* ten-paired, oblong. *Stipules* obliquely crescent-shaped, with a bristle at each angle. *Racemes* lateral. Three lower filaments with a globular swelling near the middle.

A native of Chittagong. In the Botanic garden at Calcutta it flowers in April.

Trunk short; in one tree twelve years old, it is thirty-eight inches in circumference. *Bark* smooth. *Branches* numerous, bifarious, spreading much; *young shoots* slightly pubescent, grooved, and flexuose. *Leaves* bifarious, spreading, about a foot long or more. *Leaflets* from eight to twelve pair, toward the apex narrower and sub-lanceolate; the lower pairs ovate and ovate-lanceolar, all are smooth and entire, from two to three inches long. *Petioles* round, slightly villous, without glands. *Stipules* obliquely crescent-shaped, with the extremities lengthened into long subulate spurs. *Racemes* lateral, on the naked, two or more year-old branchlets, simple. *Bractes* three-fold, one-flowered, narrow-lanceolate, the lateral pair smaller. *Pedicels* slender, villous, diverging, about two inches long, one-flowered. *Flowers* large, of a beautiful pale pink colour. *Leaflets* of the calyx equal, ovate. *Petals* lanceolate, nearly equal, eight or ten times longer than the calyx. *Filaments* ten, very unequal; the lower three much longer, each with a globular swelling near the middle and a double curve below it. *Anthers* on the three long filaments opening on the sides, the rest opening by two pores at the base. *Germ* pedicelled, incurved, cylindric, one-celled, containing numerous seeds attached to the upper suture or concave side. *Style* very short. *Stigma* minute, green. *Loment* cylindric, pendulous, about two feet long, more than eighty-celled, with transverse partitions, lined with a dry substance. *Seed* solitary. *Perisperm* in small quantity, and particularly yellow. *Embryo* as in C. *bacillus*, &c. *see Gært. sem. 2. p. 313.*

4. C. *bacillus. Gœrt. sem.* 2. *p.* 313.

Leaflets from ten to twelve pair, oblong, or oval, obtuse. *Stipules* crescent-shaped, adnate. *Racemes* terminal, on short lateral branchlets. The three lower filaments with an oval, swelling near the middle.

Cassia fistula silvestris. *Rumph. Amb.* 2. *t.* 22.

A native of the Malay Islands. From seed received from Sumatra into the Botanic garden at Calcutta many trees have been reared. They blossom during the hot season and ripen their seed in February. When in flower it is by far the most beautiful *cassia* I have yet seen.

Trunk of our young trees rather crooked and leaning to one side. *Bark* smooth, dark brown, spreading almost horizontally, with alternate, bifarious spreading-flexuose branchlets. *Spines*, the base of many of the branchlets become such, and of great strength, and size. *Leaves* alternate, bifarious, pinnate, from six to twelve inches long. *Leaflets* generally from eight to fourteen pair though on the small lateral floriferous branchlets they are often only from two to three or four pair, all very short petioletted, oval, or oblong, entire, very obtuse or even marginate and smooth; from one to two inches long and about half that in breadth. *Petioles* without glands. *Stipules* crescent-shaped, lower half narrower, and less obtuse, the upper half much broader and emarginate, with a bristle. *Racemes* terminal, on short lateral branchlets. *Bractes* ten, cordate, cuspidate, one-flowered. *Pedicels* long, and slender. *Calyx* of five, ovate, dull reddish leaflets, many times smaller than the corol. *Petals* oblong, differing in size only, of a lovely pink or rose colour. *Stamina* all fertile, the three lower filaments much longer, and having each an oval swelling near the middle and a double curve below it. *Anthers* on the three long filaments ovate; on the other seven incumbent, with pores at the small end. *Germ* long-pedicelled, subulate, one-celled, containing numerous seeds attached

to the upper suture. *Loment* cylindric, from eighteen to twenty-four inches long and about three quarters of an inch in diameter, covered with very dark brown, rather smooth, torose bark, &c. as in *cassia fistula,* which it resembles so exactly that the soft sweet pulp of *fistula* is the only distinguishing mark. In this species the cells between the seventy or eighty partitions are filled with a spongy substance in which is a roomy cell for each seed. *Seed* solitary, obovate, a little compressed, the size of a pea, smooth, of a shining brown colour. *Integument* simple, when fresh rather soft and tough. *Perisperm* of a tough, soft, horny texture, and brownish colour. *Embryo* straight, yellowish. *Cotyledons* two, oval, cordate, three-nerved. *Plumula* two-lobed, one large, and pinnatifid, the other a minute point. *Radicle* oval, lodged immediately within the umbilicus.

5. C. *marginata. R.*

Leaflets fifteen pair, oblong, margined. *Stipules* semisagittate. *Racemes* axillary.

A native of Ceylon introduced into the Botanic garden at Calcutta by General Macdowall in 1802, where it blossoms during the rains, and ripens its seed in March and April. The tree is at all times uncommonly beautiful and particularly so when in flower.

Trunk tolerably straight, in trees six years old about two feet in circumference, and covered with deeply cracked, dull, light brown-coloured *bark. Branches* spreading much, secondary *branches,* and *branchlets* bifarious and horizontal. *Bark* of the larger *branches* greenish, ash-colour, spotted with brownish spongy excrescences; *tender shoots* flexuose, furrowed and villous. *Leaves* alternate, bifarious, drooping a little, pinnate, from six to ten inches long. *Leaflets* from ten to twenty pairs, linear-oblong, often emarginate, a little villous underneath, having the margins coloured, and somewhat thickened, about one inch

long and half an inch broad. *Petioles* channelled, villous, with glands upon them. *Stipules* semisagittate, both barbs and the apex cuspidate and curved. *Racemes* axillary, solitary, much shorter than the leaves. *Bractes* tern, lanceolate, the inner two on the base of the pedicel, and much smaller. *Flowers* of a middling size, pink colour, marked with greenish nerves and veins. *Petals* nearly equal, three on the upper side and two on the under. *Stamina* all semifertile; the three lower ones much the longest and with a double curve below the middle, but no swelling as in C. *nodosa*, and some of the other species, the anthers on the three long filaments, are ovate and erect, all the others are incumbent, with pores at the small end. *Lo-ment* cylindric, from eight to twelve inches long, and as thick as a man's little finger, covered with a dark brown, torose, somewhat ligneous bark; divided by transverse partitions, into thirty or forty cells, in which is lodged, a soft, white, spongy substance which involves the seeds. *Seeds* solitary, obovate, size of a small pea. *Integuments* single, smooth, light brown. *Perisperm* conform to the seed, soft, and tough, divided to the base into two lobes by the large cotyledons. *Embryo* straight, green. *Cotyledons* oval-cordate, three-nerved, transversely curved like the letter S. *Plumula* of two very unequal lobes, the largest pinnatifid; the smallest a mere point. *Radicle* roundish, immediately within the umbilicus.

SENNA. Gært.

Calyx five-leaved. *Corol* irregular, five-petalled. Fertile anthers beaked, opening by two pores at top.

1. S. *exigua. R.*

Leaflets two pair, oval. *Stipules* and *bractes* filiform. *Flowers* tetrandrous.

A minute, erect, flexuose, hairy plant, with small yellow flowers, in small subterminal racemes. A native of Bengal; it flowers about the close of the rains.

2. S. *absus. R.*

Biennial, clammy. *Leaflets* two pair, obovate. *Flowers* pentandrous. *Stamens* five, equal. *Legumes* straight, hairy, six-seeded.

Cassia absus. *Willd.* 2. 514.

A small bi- or triennial, ramous species, every part of which, the leaves excepted, is covered with glutinous hairs.

Leaves alternate, bifarious, twice-paired. *Leaflets* obliquely-oval,obtuse, somewhat hairy on the under side; about an inch long. *Petioles* the length of the leaflets. *Glands* an awled one between each pair of leaflets. *Stipules* acute. *Racemes* either opposite to the insertion of the leaves or nearly so, or terminal, few flowered. *Flowers* yellow, small. *Pedicels* bracted at the middle. *Calyx* glandular. *Stamens* five, equal, no rudiments of more; the anthers opening by a slit on each side of the pointed apex and not by round lobes in the apex. *Legumes* hairy, six-seeded. *Seeds* black.

3. S. *Tora. R.*

Annual. *Branches* spreading. *Leaflets* three-paired, obovate-cuneate, a subulate gland between each of the lower two pairs. *Stipules* subulate. *Flowers* in axillary pairs. *Legumes* long, recurved, subcylindric. *Seeds* numerous.

Cassia tora. *Willd.* 2. 515.

Sans. Prusni-purni.

Beng. Chakunda.

Teling. Tantim.

A little more robust than the last, and a native of the same country. In flower and seed great part of the year.

4. S. *toroides. R.*

Annual. *Leaflets* three pair, cuneate, obovate, a subulate gland between the lower pair only. *Flowers* in axillary pairs on a short common peduncle. *Stipules* subulate. *Legume* linear, four-sided.

The seeds of this plant were sent from Mysore to the Botanic garden at Calcutta by Dr. Buchanan in 1800, and about the close of 1801 the plants blossomed.

Stem annual, erect, somewhat woody *branches ;* spreading, height of the whole plant about six feet. *Leaves* pinnate, spreading or drooping. *Leaflets* three pair, occupying the exterior half of the petiole, obovate-cuneate, sessile, entire, villous ; the lower pair smaller ; all somewhat acuminate, with a small soft bristle, from one to two inches long. *Glands*, a single, yellow, subulate one between the lower pair of leaflets only. *Stipules* subulate, villous. *Flowers* axillary, in pairs, large, yellow, on long pedicles, inserted on a short common peduncle, with some small bractes about the insertion, one of the two uniformly proves abortive. *Petals*, the upper one obcordate, the rest oval. *Filaments*, the three upper ones minute, and abortive ; the lower seven nearly equal and fertile. *Legume* long, straight, four-sided, with a double groove, or three keels on each margin, from six to nine inches long. *Seeds* numerous, from twenty to thirty, trapeziform, smooth, pale brown.

This plant is allied to C. *Tora.* The best specific difference is one gland only, and that between the lower pair of leaflets, in *Tora* there are always two, that is one between each of the two lower pairs. But in appearance and smell the difference is very great. This grows nearly erect, to the height of six or more feet, and has little or no smell whereas in the same soil, and with the same treatment. *Tora* is diffuse, rarely more than one or two feet high, the flowers and legumes are much smaller, and the smell very different.

5. S. *aurata. R.*

Shrubby. *Leaflets* three pair, ovate-oblong, pointed, smooth, having a conic gland between each pair. *Stipules* and *bractes* ensiform. *Racemes* corymbose. *Legumes* cylindric, obtuse, pendulous.

A stout, lucid, very handsome shrub, with many large, bright gold coloured flowers ; a native of the countries and islands to the eastward of the Bay of Bengal. In the Botanic garden at Calcutta it blossoms freely during the rains and the seed ripens in the cool season.

6. S. *bicapsularis. R.*

Shrubby, with long, weak, slender, smooth, subcandent branches. *Leaflets* four-pair, obovate ; a globular yellow gland between the lower pair. *Stipules* subulate. *Racemes* axillary, as long as the leaves. Two of the anthers much larger. *Legume* torulose, many-seeded.

Cassia *bicapsularis. Willd.* 2. 516.

Probably not a native of India ; how it came into the Botanic garden at Calcutta is uncertain, but there it is now common, and blossoms about the close of the rains in September and October.

7. S. *purpurea. R.*

Annual, erect, smooth. *Leaflets* from four to six pair, lanceolar, on hemispheric glands at the base of the petiole, the lower one and three superior stamens sterile. *Legumes* turgid, many-seeded.

Beng. Kala-Kalkashinda.

Teling. Conda kashinda.

A large, erect, ramous, annual species, a native of the mountainous parts of the Coast. I have raised it from seeds in my garden, and from these plants this description is taken. Flowering time the cold season, the whole plant is about three feet high.

Stem erect, as thick as the little finger, round, smooth,

somewhat woody, purple coloured. *Branches* numerous, ascending, a little flexuose, very smooth ; of a deep, clear, reddish purple colour. *Leaves* remote, from four to six-paired. *Leaflets* oblong, lanceolar, smooth, entire, ending in a soft bristle, the interior one generally the largest ; in breadth nearly equal, from one to one and a half inches long, and about half an inch broad. *Petioles* smooth, purple, channelled. *Glands* a semiglobular one near the base of the petiole. *Racemes* axillary, solitary, shorter than the leaves, few-flowered. *Flowers* pretty large, bright yellow. *Bractes* broad lanceolate, falling. *Stamens* as in the genus, except that, as in C. *sophora* and *esculenta*, the inferior one is small, and sterile. *Stigma* incurved, perforated. *Legumes* sub-cylindric. *Seeds* very numerous.

8. S. *occidentalis. R.*

Annual, erect, ramous. *Leaflets* four or five pairs, ovate lanceolate, acuminate, having a dark brown, polished, hemispheric gland on the tumid base of the petiole. *Legume* linear, subcylindric.

Cassia *occidentalis. Willd.* 2. 518.

A native of Bengal. Flowering time the rainy season. The smell of every part heavy and offensive in the extreme.

Stem erect, smooth, rather polished, somewhat ligneous, though generally annual. *Branches* many, ascending, flexuose, smooth, coloured with a mixture of dark purple and green ; height of the whole plant from three to six feet. *Leaves* alternate, pinnate, from four to eight inches long. *Leaflets* four or five pair, the lowermost ovate, and smallest, the superior ones ovate-oblong and much larger, all smooth, entire, and acuminate, from one to three inches long, and from one to one and a half broad. *Petioles* nearly round, and smooth; on the green tumid base is a polished, dark brown, hemispheric gland. *Stipules* semi-ovate, acuminate, curled, cadu-

cous. *Flowers* terminal and axillary, when terminal they form an uninterrupted raceme ; when axillary they are three, four, or five, on a very short, common peduncle. *Pedicels* much longer than the peduncle. *Calyx*, scarcely half the length of the corol. *Corol*, the lower two petals, rather smaller than the other three, and closer together. *Filaments*, the lower one small and abortive, the next pair largest, the next two pairs smaller, and with the large pair, fertile, the upper one small, and barren. *Legume* nearly straight, when full grown about as thick as a rattan and nearly cylindric. *Seeds* numerous.

9. S. *obtusa. R.*

Diffuse. *Leaflets* five-pair, obovate obtuse. *Petioles* without glands. *Stipules* cordate-lanceolate. *Racemes* axillary. *Legume* lunate.

Cassia *senna. Burm. H. Ind. t.* 33. *f.* 2.

A native of the high, dry, uncultivated lands of Mysore, where the leaves are used as a substitute for *senna.* The seeds were sent by Dr. Buchanan from Seringapatam to the Botanic garden at Calcutta, where the plant thrives well, flowering and ripening its seed most part of the year.

Root perennial. *Stems* scarcely any, but many straggling branches resting on the ground. *Leaves* nearly bifarious, five or six inches long. *Leaflets* from four to six pairs, linear-oblong, with the exterior pair more cuneate, all obtuse, and somewhat villous, about one inch long. *Petioles* slightly channelled without any appearance of glands. *Stipules* tapering, from an ovate-cordate base. *Racemes* axillary, solitary, shorter than the leaves, bearing a few small, yellow, short-pedicelled flowers. *Bractes* ovate-cordate, acuminate, concave, one-flowered. *Calyx* about a third shorter than the corol. *Filaments*, the two uppermost small and sterile. *Legume* broad, thin, lunate, transversely grooved, in other respects smooth : about

two inches long and three quarters of an inch broad. *Seeds* from six to eight, wedge-shaped, rugose, &c. as in *Cassia senna.*

10. S. *arborescens. R.*

Arboreous. *Leaflets* five or six pairs, oblong, with a pedicelled gland between each of the lower two or three pairs. *Stipules* falcate. *Racemes* axillary. *Legumes* linear, thin, pendulous, many-seeded.

Cassia arborescens. *Willd.* 2. 520.

C. *glauca. Lamarck's Encycl.* 1. 647.

Wellia tagera. *Rheed. Mal.* 6. *t.* 9. *and* 10.

It is a native of various parts of India, and in blossom in the Botanic garden at Calcutta most part of the year.

Trunk rarely straight and in length and size very various. *Branches* numerous, spreading in every direction. *Bark* of the trunk, and larger branches of a brownish ash colour, and tolerably smooth; that of the young shoots smooth and green. *Leaves* scattered, pinnate, from six to ten inches long. *Leaflets* from four to six pair, elliptic; the inferior pairs smallest, and broader in proportion to their length; smooth on both sides, and of a pale green colour, the superior pair about three inches long, and about one and a quarter broad. *Petioles* round, smooth, having a pedicelled, brown, round gland between each of the lower two or three pairs of leaflets. *Stipules* falcate, incurved. *Racemes* axillary, solitary, about half the length of the leaves erect, bearing near the apex, many, large, pale yellow, long-pedicelled flowers. *Bractes* solitary, one-flowered, elliptic, revolute, caducous. *Calyx*, leaflets very unequal, pale yellow, smooth. *Petals* nearly equal, expanding. *Anthers* all fertile, and nearly equal, though the inferior two have much longer filaments than the other eight. *Legumes* linear, thin, contracted between the seeds, smooth, pendulous, from six to eight inches long, and about three quarters of an inch broad.

11. S. *officinalis. Gært.*

Biennial, ramous. *Leaflets* six-paired, lanceolar, no glands. *Stipules* acute, expanding. *Racemes* axillary. *Legumes* oblong, incurved, thin.

Cassia *Senna. Willd.* 2. 520.

Arab. Suna, or Sena.

A native of the interior of India, as well of Arabia, &c.

12. S. *esculenta. R.*

Annual, erect. *Leaflets* seven or eight pair, lanceolate, acute. *Racemes* terminal, panicled. *Legumes* linear, turgid, many-seeded.

Teling. Nutee-kashinda-kura.

A large, erect, annual, much like *cassia sophora,* but not so very offensive in its smell. It grows about hedges, rubbish, &c. with that plant, but is not so common. Flowers during the cold season.

Stem erect, flexuose, a little furrowed, commonly from two to three feet high. *Branches* few, nearly erect, axillary, in form like the stem. *Leaves* alternate, abruptly-pinnate, six or seven inches long. *Leaflets* from six to nine pair, lanceolate, acute, entire, smooth, soft, when young a little downy; two or two and a half inches long, and three-fourths of an inch broad. *Petioles* channelled, ending in a brown bristly point. *Glands* a clubbed one near the base of the petiole. *Stipules* small, caducous. *Racemes* terminal, and from the exterior axils, the terminal one a large, compound pannicle, the axillary ones smaller and simple. *Flowers* middle-sized, yellow. *Stamens,* the lower one small and sterile, the next two large; the next four middle-sized; the upper three small and sterile.

The smell of this plant is heavy, and disagreeable. Its leaves are eaten in curries by the natives.

13. S. *sophora. R.*

Annual, erect. *Leaves* from eight to ten-paired, lanceolar, smooth ; the lower much smaller, a clavate gland at the base of the petiole. Upper petal retuse. The lower and three upper stamina sterile. *Legume* linear, turgid, many-seeded.

Cassia *sophora. Willd.* 2. 525.

Beng. Kul-kashinda, and the dark purple variety, which is as common as the green, they call Kala-kul kashinda.

Ponnam-tagera. *Hort Mal.* 2. *t.* 52.

Gallinaria acutifolia. *Rumph. Amb.* 5. *t.* 97. *f.* 1.

A native of Bengal, &c. Flowering in the rainy and cold season.

14. S. *speciosa. R.*

Arborescent. *Leaflets* from eight to nine-paired, oblong, obtuse, having a smooth pedicelled gland between the lower two, or three pairs. *Racemes* axillary, long-pedunculed. *Legumes* leafy, linear.

This species I have only found in gardens ; there it is a most shewy plant, and in flower most part of the year.

Trunk erect. *Branches* many, ascending. *Leaves* numerous, about six inches long. *Leaflets* from eight to nine pair, oblong, obtuse, smooth, the interior pairs largest ; a pedicelled gland between each of the lower two or three pairs. *Stipules* ensiform, inflexed. *Racemes* axillary, solitary, long-peduncled. *Flowers* numerous, large, yellow. *Bractes* solitary, one-flowered, lanceolar oblong. *Stamens*, all the ten fertile. *Legumes* thin, leafy, about six inches long, and less than one broad.

15. S. *Sumatrana. R.*

Arboreous. *Leaflets* from six to ten pairs, oblong, emarginate, smooth, glands none. *Stipules* minute, subulate. *Panicles* terminal. *Legumes* linear, compressed, many-seeded.

The seeds of this quickly growing, beautiful, stately, useful species were sent to me from Bencoolen by Dr. C. Campbell in the beginning of 1800, and in two years the young trees reared from them, were not less than from ten to twenty feet high, and stout in proportion. In August, 1801, they blossomed for the first time and ripened their ssed in April, 1802. Now, 1809, they have grown to a very great size for their age, with a trunk thirty-six inches in circumference and four feet above ground.

Trunk straight and covered with smooth, olive-coloured bark. *Branches* few, spreading. *Leaves* numerous, alternate, pinnate, from six inches to a foot long. *Leaflets* from four to fourteen pair, opposite, short-petioletted, oblong, entire, smooth, polished, of a deep, shining green, the exterior pairs largest; are entire, more or less emarginate, with a small bristle at the apex; from two to three inches long and from half an inch to an inch broad. *Petioles* smooth and channelled, no glands. *Stipules* minute, subulate, caducous. *Panicles* terminal, very large, erect, ovate, composed of many alternate, corymbiform racemes. *Flowers* numerous, large, bright yellow. *Bractes* lanceolate, concave, one-flowered. *Calyx* of five, unequal, pale yellow, roundish, concave reflexed leaflets, about one-third the length of the corol. *Corol* the superior petal small, longer-clawed, and obcordate; the other four nearly equal, and almost round. *Filaments* seven fertile ones, but as in the genus, differing much in size; the three uppermost barren, and small. *Legumes* linear, thin, swelled a little at the seed, smooth, both margins rounded, of a dark brown, from six to eight inches long. *Seeds* many, thin, oval, of a dark shining brown colour.

Dr. Campbell says that it is one of their most useful trees in Sumatra, is of rapid growth, and the wood not inferior to Ebony when old. I may add that in Bengal its growth is also uncommonly rapid and the tree one of the most beautiful the country can boast of.

16. S. *auriculata. R.*

Shrubby. *Leaflets* ten-paired, oblong. *Stipules* ear-shaped. *Racemes* terminal, corymbiform. *Legumes* membranous, from ten to twelve seeded.

Cassia auriculata. *Willd.* 2. 526.

Teling. Tangher*oo.*

It is one of the most common shrubs on the coast of Coromandel, looks well, and is in flower during the whole of the year.

Stems trifling, crooked. *Branches* spreading in all directions; *bark* dark-coloured, and pretty smooth; the whole plant is in general from four to eight feet high. *Leaves* scattered, from eight to twelve-paired. *Leaflets* oblong, entire, mucronate, a little downy. *Glands* a subulate one between each pair of leaflets. *Stipules* kidney-form, behind is a long spur on the side next the petiole. *Racemes* terminal, and from the exterior axils, sometimes compound, corymbiform. *Bractes* three-fold at the insertion of the pedicels. *Flowers* large, numerous, bright yellow. *Calyx*, the two exterior leaflets small. *Stamens* as in the genus. *Legume* linear, membranaceous, waved, from ten to twelve-seeded.

With the bark the natives commonly tan and dye their leather of a buff colour. It is a pretty strong, simple astringent.

The caterpillar of a large species of silk worm feeds on the leaves of this plant.

17. S. *alata. R.*

Shrubby. *Leaflets* from ten to twelve pair, linear-oblong; no glands. *Racemes* terminal. *Bractes* coloured, caducous. *Legumes* enlarged on each side with a broad crenulated wing. *Seeds* numerous.

Cassia alata. *Willd.* 2. 523. *Herpetica, Jacq. obs.* 2. 24. *t.* 45. *f.* 2.

Herpetica. *Rumph. Amb.* 7. *t.* 18.

Sans. Dadrooghna.
Hind. and *Beng.* Dad-murdun.
Tam. Wandu Rolli.
Teling. Mitta tamara.
The English, and I believe all other Europeans on this coast, call it also *Mitta tamara.*

It is a large shrub found in our gardens; where it is indigenous I cannot say. In a cultivated state it flowers during the latter part of the wet season, and beginning of the cold. The seeds ripen during the latter part of the cold season.

Stem erect, often as thick as a man's leg, marked by the cicatrices of the fallen leaves, and the permanent stipules, which appear like prickles. *Leaves* scattered, abruptly pinnate, two feet long. *Leaflets* opposite, from eight to fourteen pair, the exterior largest, linear-oblong, obtuse, or emarginate, with a point, smooth, entire, veined; from three to six inches long, and from two to two and a half broad; the lower pair more distant from the next pair than the others above, nearly round and reflexed back on the stem or branches. *Petioles* channelled; the channel large and formed by two thin, firm yellow borders; there is a cross bar between each pair of leaflets, covered with small dark-coloured bristles and no other gland, each of them terminates in a cordate point. *Stipules* ear-shaped, rigid, pointed, lasting. *Racemes* terminal and from the exterior axils, long, sometimes two-forked, nearly erect. *Flowers* numerous, simple, large, yellow. *Bractes* large, one-flowered, oval, concave, yellow, caducous. *Calyx* coloured like the corol. *Legume* horizontal, from five to six inches long, enlarged with a broad crenulated wing on each side which runs the whole length. *Seeds* numerous.

The Telinga and Tamul Physicians say it cures all poisonous bites and other venereal outbreakings, and also strengthens the body. The fresh leaves are very of-

ten employed to cure ring-worms. They are well rubbed into the parts affected, once or twice a day, and generally with great success.

Seeds from the West Indies received into the Botanic garden at Calcutta, under the name *Cassia herpetica* produced this very plant.

18. S. *glauca. R.*

Arboreous. *Leaflets* as far as sixteen pair, linear, obtuse, smooth, no glands. *Stipules* minute. *Panicles* terminal, composed of distinct corymbs. *Legume* linear, from eight to ten-seeded, having a conical gland on the upper edge of its pedicel which is particularly conspicuous in the germ.

A pretty large tree, a native of the Carnatic, from hence Dr. Berry sent seeds to the Botanic garden at Calcutta, where it blossoms in November and December, with Senna *Sumatrana* which it much resembles, but differs in the number, and shape of the leaves, the shape of the petals, and the pale glaucus colour of the whole foliage, the seed ripens in March.

Trunk of young three-years-old trees in the Botanic garden erect, thick as a man's leg, with smooth brownish bark. *Branches* spreading; *young shoots* smooth and coloured, whole height of the trees about fifteen feet. *Leaves* alternate, pinnate, from six to twelve inches long. *Leaflets* from eight to sixteen pair, linear-oblong, smooth, obtuse, with a slender bristle at the apex, from one to two inches long, and about half an inch broad. *Petioles* channelled, and destitute of glands. *Stipules* minute, caducous. *Panicles* terminal, composed of simple, expanding corymbs.

A single, simple, similar corymb is generally found in the axil of each of the exterior leaves. *Flowers* pretty large, yellow. *Petals* the lower pair larger, and more remote from each other. *Stamens* simple, seven are near-

ly equal and fertile, the superior three small and sterile. *Legume* linear, very thin; smooth, somewhat pedicelled, with a gland, or conical process on the upper edge of the pedicel. This is particularly conspicuous in the germ, and is a good specific mark and immediately distinguishes it from S. *Sumatrana* which has no such gland and is the only species known to me, forwhich it can be mistaken. *Seeds* generally about fifteen, separated by very firm distinct partitions, and attached by convolute slender cords to the upper margin.

19. S. *prostrata. R.*

Perennial, prostrate. *Leaflets* minute, twenty-paired, daggered. *Peduncles* from two to three-flowered. *Stamens* five; all fertile. *Legumes* straight, six-seeded.

Teling. Nalla Jeelooga.

A native of pasture ground. Flowers during the wet and cold seasons.

Root woody, perennial. *Stems* perennial, numerous, spreading every way and pressing close upon the ground, round, a little hairy, about a foot long. *Leaves* pinnate, alternate, bifarious. *Leaflets* from twelve to twenty-six pair, minute, linear, acute, the lower margin ciliate. *Glands,* a long pedicelled, peltate one between the lower pair of leaflets. *Stipules* semilanced, very acute. *Flowers* above the axils, peduncled, small, yellow, from one to three. *Calyx. Leaflets* equal, daggered. *Stamens* five, nearly equal; no sterile filaments. *Legumes* linear; *partitions* obliquely-transverse, as is *Galega,* smooth. *Seeds* from six to seven, shining, dark brown.

Cattle eat it.

20. S. *dimidiata. Buch.*

Annual, slender, erect. *Leaflets* thirty pair, with a flat gland between the lowermost. *Peduncles* above the axils from two to four-flowered. *Stamens* four, or five, all fer-

tile, but two coloured. *Legume* straight, from ten to fifteen seeded.

A native of Nepal, from thence seeds were sent by Dr. Buchanan, to the Botanic garden at Calcutta, where the plants thrive luxuriantly, and are in blossom and seed most part of the year. It is a beautiful, delicate species.

Root sometimes biennial. *Stems* and *branches* straight; the lower parts round, and smooth, the superior and more tender parts clothed with a few curved hairs; the general height of the plants in the Botanic garden is about three feet. *Leaves* alternate, bifarious, pinnate, from two to three inches long. *Leaflets* numerous, semilanceolate, smooth. *Glands* a pretty large one between, or rather under the lower pair of leaflets. *Stipulets* fine taper-pointed. *Peduncles* solitary, rather above the axils, very short, each producing in succession, three or four long-pedicelled, small, yellow flowers. *Stamina* four or five, all fertile, two of the anthers are always coloured. *Stigma* large, with a sharp ciliate margin. *Legumes* straight, smooth, containing from six to twelve, or even fifteen seeds.

21. S. *sensitiva. R.*

Perennial, procumbent. *Leaflets* minute, from forty to fifty pairs. *Peduncles* from one to two flowered. *Stamens* ten, all fertile. *Legumes* straight, many-seeded.

A small, elegant, procumbent plant, growing on pasture ground. It flowers during the wet season.

Root perennial. *Stems* or *branches* many, procumbent, alternate, bifarious, a little hairy, with the extremities ascending, from twelve to eighteen inches long. *Leaves* pinnate, alternate, bifarious, from one to two inches long. *Leaflets* from thirty to sixty pairs, minute, obliquely-oblong, pointed. *Glands*, a round, peltate, sessile one between the lowest pair of leaflets. *Petioles* upper side ridged, notched, with a minute bristle in each of the notches.

Stipules at the base cordate, tapering to an acute point. *Peduncles* above the axils, one or two, one-third the length of the leaves, one-flowered. *Bractes* one or more embracing the base of the peduncle, and two opposite near the apex. *Flowers* yellow, the stamens being much shorter than the pistil, bow till the germ is impregnated. *Stamens* ten, nearly equal. *Legume* erect, linear, flat, from fifteen to twenty-seeded.

Note. It is at first sight very much like S. *prostrata* but on examination they prove very different. The leaves are considerably more sensitive than any other of this genus that I know.

22. S. *tenella. R.*

Biennial, erect, ramous. *Leaflets* from fifty to sixty pair, minute, linear-lanceolate mucronate, a flat gland between the lower pair. *Petioles* sharp-edged and crenulate on the upper side. *Flowers* one or two, rarely three, above the axils. *Anthers* ten, all fertile. *Legume* from ten to twelve-seeded.

It is a native of the interior parts of Bengal, and from thence was introduced into the Botanic garden at Calcutta, by Dr. W. Carey in 1799, where it blossoms during the rains, and the seeds ripen during the cold season.

Root about biennial in the Botanic garden at Calcutta. *Stem* erect, slender, with many expanding, slender, bifarious, somewhat hairy branches, height of the whole plant, in a good soil from two to three feet. *Leaves* alternate, bifarious, pinnate, from two to three inches long. *Leaflets* from forty to sixty pairs, very small, lanceolate, mucronate, and smooth. *Petioles* villous, with the upper-edge sharp and crenulate, and a large flat gland at the lower pair of leaflets. *Stipules* semilanceolate, acute. *Peduncle,* common, a little above the axils, short, each bearing in succession two or three, pretty large, bright yellow flowers on long pedicels. *Bractes* one at the base of each

pedicel and two below the flowers near the apex of the pedicels. *Calyx ; leaflets* lanceolate, rather shorter than the petals. *Petals* orbicular, the two lower ones smaller than the others. *Anthers* ten, all fertile, alternately larger. *Legumes* linear-cuneate, much compressed, suberect, smooth, from one to two inches long, containing from six to twelve or even more seeds.

POINCIANA. Schreb. gen. n. 701.

Calyx five-leaved. *Petals* five, unequal, the highest longer clawed, more beautifully coloured, and fringed. *Stamina* long, ascending, naked, all fertile.

1. P. *pulcherrima. Linn.*

Shrubby, armed. *Leaves* bipinnate. *Leaflets* oblong, emarginate. *Racemes* terminal, corymbiform. Claw of the upper petal tubular. *Stamina* much longer than the petals.

Cæsalpinia *pulcherrima. Ed. sp. Willd.* 2. 531.

Tsetti-mandarum. *Rheed. Mal.* 6. *t.* 1.

Sans. Krishna choora.

Beng. Krishna-choora.

Tam. Komri.

Common in gardens all over India, and in flower and seed the whole year. Plants reared from seed from the West Indies do not in any respect differ from those of India.

The trunk of this little tree or large shrub, when old, I have found constantly hollow, and occupied by a large red dark brown ant. From these, when disturbed, they issue forth in numbers, and by their bite inflict a severe and painful punishment on their disturbers.

2. P. *elata. Lin. Spec.* 544.

Arboreous, unarmed. *Leaves* bipinnate. *Leaflets* linear.

Cæsalpinia *elata*. *Willd.* 2. *p.* 532.

A native of Coromandel, where it blossoms during the dry season.

Trunk erect, though rarely straight, often as thick as a man's body. *Bark* pretty smooth, ash-coloured. *Branches* numerous, spreading much, the general height of full grown trees from twenty to thirty feet. *Leaves* alternate, bipinnate, about six inches long. *Pinnæ* from six to seven pair, opposite. *Leaflets* from ten to twenty pair, sessile, opposite, linear, smooth; about four lines long, and one in breadth. *Petioles* common, grooved on the upper side, smooth, and without glands. *Stipules* minute, subulate. *Racemes* terminal, corymbiform, simple, few-flowered. *Flowers* large, very gaudy, inodorous, yellow. *Bractes* small, one-flowered, caducous. *Calyx* divided to its fleshy base, into five, equal, lanceolate segments, which are villous on the inside. *Petals* five, inserted on the fleshy base of the calyx, of which the upper one is smaller, and deeper coloured, all nearly round, and much curled round the edge. *Filaments* ten, equal, ascending, afterwards recurved, twice the length of the petals, thick and villous at the base, inserted on the calyx, within the petals. *Anthers* incumbent. *Germ* sessile, linear, villous, one-celled, with from fifteen to twenty *ovula* attached to the upper suture. *Style* as long as the filaments, for some time after the flower expands modestly recurved from the filaments, which have then a different direction, afterwards ascending, when the filaments become declinate. *Stigma* small, turbinate.

CAESALPINIA. Schreb. gen. n. 703.

Calyx, base permanent; *border* five-parted, and deciduous. *Corol* irregular, five-petalled, the upper one smaller. *Filaments* woolly. *Anthers* all the ten fertile, and open on their sides.

1. C. *Sappan. Willd.* 2. 533. *R. Corom. pl.* 1. *p.* 17. *t.* 16.

Arboreous, armed. *Leaves* bipinnate; *pinnæ* from ten to twelve pair; *leaflets* from ten to twelve pair, somewhat dolabriform. *Panicles* terminal. *Legumes* ligneous sub-trapeziform, from three to four-seeded.

Lignum sappan. *Rumph. Amb.* 4. *t.* 21.

Sans. Patanga.

Teling. Beng. and *Hind.* Bukkum. This is also said to be the Arabic and Persian name.

Tjsam-pangam. *Hort. Mal.* 6. *t.* 2.

Found in most parts of India, and its islands. It flowers in the hot season.

2. C. *Bonduccella. R. Fleming in Asiat. Res.* 11. 159.

Scandent, armed. *Leaves* bipinnate; *pinnæ* seven pair; *leaflets* eight pairs, ovate-oblong. *Stipules* large, and pinnatifid. *Bractes* lanceolate, reflected. *Racemes* simple, above the axils. *Legumes* armed, two-seeded.

Puticaraja. *Asiat. Res.* 2. *p.* 351; *also* 4. *p.* 276. *and* 11. 159.

Guilandina *bonduccella. Linn. Lamarck,* &c.

Globuli *majores. Rumph. Amb.* 5. *t.* 49. *f.* 1.

Caretti. *Rheed. Mal.* 2. *t.* 22.

Beng. Nata.

Hind. Katkarunja, Katkulija.

The plants reared from seed from the West Indies, proved to be exactly the same. The seed is a powerful tonic.

3. C. *oleosperma. R.*

Scandent, prickly. *Leaves* bipinnate; *pinnæ* and *leaflets* eight paired. *Stipules* subulate. *Legumes* unarmed, from two to three-seeded, and swelled at the seeds.

Beng. Umul-koochi.

Teling. Noonee glika. *Noonee* means oil, oily.

This seems to me to be an undescribed species, has

much the habit of *Bonduccella.* It flowers during the wet season. The seeds ripen in March and April.

Stem and *branches* climbing, woody, armed with many small, sharp, recurved prickles. *Leaves* alternate, abruptly-bipinnate, oblong, from eight to nine inches long, and about four broad. *Pinnæ* opposite, seven, eight, or nine pairs. *Leaflets* opposite, from six to ten pair, linear-oblong, smooth, entire, about one-third of an inch long, and one-fifth broad. *Petioles* common, are frequently armed with some, small, scattered prickles, and there is generally a pair below each pair of pinnæ. *Stipules* subulate. *Racemes* rather above the axils, simple, somewhat shorter than the leaves. *Pedicels* diverging, about an inch and a half long. *Flowers* many, pretty large, yellow. *Petals* orbicular, the lower end smallest, and striated with red. *Filaments* woolly, alternately shorter. *Legume* smooth, oblong, obliquely-jointed, very protuberant at the seeds; about two and a half inches long, and one broad. *Seeds* two or three, oval, smooth, shining, hard, about the size of a large pea.

From the seeds, an oil is expressed, in some part of the country, which is used to burn in lamps.

4. C. *cucullata. R.*

Scandent, armed. *Leaves* bipinnate; *pinnæ* from four to six pair; *leaflets* from four to five pair, ovate, polished. *Panicles* terminal, and axillary, thin. Upper petal two-lobed and vaulted. *Legume* thin, smooth, membrane margined on the back, one or two-seeded.

A native of the Delta of the Ganges where it was found by Dr. William Carey, and by him introduced into the Botanic garden at Calcutta where it blossoms in February and March.

Trunk ligneous, stout, scandent, which together with the scandent branches are armed with numerous, strong, very sharp, dark-coloured, recurved prickles, which by

age acquire a large conic base. *Bark* smooth, and polished in the young shoots. *Leaves* bipinnate, from one to two feet long. *Pinnæ* opposite, from three or four to six or seven pair. *Leaflets* generally four or five pair, opposite, ovate, entire, taper-pointed, firm, and polished on both sides, from one to three inches long. *Petioles* common and partial, round, smooth, and armed with recurved prickles. *Stipules* minute, falling long before the leaves are full grown. *Panicles* axillary, and terminal, composed of a few simple, ascending, rigid racemes. *Bractes* small caducous. *Flowers* numerous, solitary, drooping, greenish yellow. *Calyx* as in the genus, yellow, and smooth, size of the corol. *Color* greenish, the upper petals two-lobed, the *lobes* large, and at all periods folded down like an arch, over the base, and the insertion of the stamina and pistil; lateral pairs nearly round, at first greenish, becoming yellow by exposure to the air and light. *Filaments* scarcely downy at the base, much longer than the corol. *Germ* short-pedicelled. *Stigma* obliquely funnel-shaped. *Legume* linear-oblong, thin, pointed and often twisted near the apex, smooth and unarmed, a thin membranaceous, scariose wing runs along the whole length of the back. *Seeds* one or two, smooth, light brown.

5. C. *Simora. Buch.*

Scandent, armed, the tender parts coloured and glandular. *Leaves* bipinnate; *pinnæ* from twelve to twenty-four pair; *leaflets* from eight to sixteen pair. *Stipules* ensiform. *Racemes* simple, leaf-opposed and terminal. *Legume* dolabriform, turgid, two-seeded.

A native of Mysore, from thence Dr. Buchanan sent seeds to the Botanic garden at Calcutta where the plants grow luxuriantly, and blossom during the cold season; the seeds ripen four or five months afterwards. *Stem* and larger *branches* stout, and ligneous, climbing over trees to a considerable extent. *Bark* brown, and armed with very

sharp, straight prickles; *young shoots* of a bright reddish colour, armed, glandular, and somewhat hairy. *Leaves* alternate, bipinnate, from one to three feet long. *Pinnæ* from twelve to thirty pairs, opposite, about two inches long. *Leaflets* from eight to sixteen pair, opposite, linear-oblong, smooth, entire; nearly half an inch long. *Petioles* common, nearly round, armed, and chiefly with three larger prickles at or near the insertion of the partial petioles, two of them below, and recurved; one above, and incurved. *Partial petioles* also armed. *Stipules* ensiform. *Racemes* nearly opposite to the leaves, and sometimes terminal, single, and simple, very long. *Peduncles* armed near the base; the rest and the diverging long pedicels dotted with many, clammy dark-coloured glands, interspersed with a few hairs. *Bractes* solitary, one-flowered, at the base ovate-cordate with subulate apices, caducous. *Flowers* solitary, pretty large, colour a bright yellow. *Legumes* turgid, of an irregular kidney-shape; acuminate, somewhat hairy; more than an inch and a half long, and about one inch broad near the apex. *Seeds* two, oblong, smooth, of a shining dark brown. *Embryo* without perisperm. *Cotyledons* two. *Radicle* directed to the umbilicus.

6. C. *sepiaria. R.*

Scandent, prickly. *Leaves* bipinnate; *pinnæ* eight pair; *leaflets* ten pair, linear oblong. *Stipules* semisagittate. *Racemes* axillary. *Calyces* coloured. *Legume* unarmed, daggered, six-seeded.

The Mysore thorn, was introduced into Bengal from that country by General Martin, where it is now as common as it is in the Mysore country, and is used to make fences. Flowering time in Bengal the cold season.

Trunk and *branches* stout, and ligneous, spreading, or climbing to a considerable extent, if not checked; all armed with strong, sharp prickles. *Leaves* alter-

nate, bipinnate, from ten to eighteen inches long. *Pinnæ* opposite, generally from six to ten pair, from one to four inches long. *Leaflets* opposite, from eight to twelve pair, subsessile, linear-oblong, rounded at both ends, smooth on both sides, about three-fourths of an inch long and one quarter broad. *Petioles* common, armed in the same manner with minute prickles. *Stipules* caducous, of a broad, waved, sub-semi-sagittate form. *Racemes* axillary, solitary, nodding, from the weight of the great number of large, beautiful, yellow flowers. *Peduncles* armed, and having often a small leaf or two below the flowers. *Bractes* solitary, ovate-lanceolate, caducous, one-flowered. *Calyx* with the divisions reflexed, coloured like the corol, and about half the size thereof. *Corol*, the two pairs of lateral petals equal, nearly round; the upper one much smaller, with a longer claw, all of a bright yellow colour. *Filaments* woolly below the middle, about as long as the larger petals, and with them inserted on the permanent base of the calyx. *Germ* oblong, villous. *Style* as long as the stamens. *Stigma* simple, perforated. *Legume* linear-oblong smooth, with a long subulate point. *Seeds* from four to eight, obovate, oblong, smooth, dark coloured, variegated, the size of a large pea.

This, when in full blossom, is ornamental and well deserving a place in the gardens of all such as are fond of showy productions. It also makes an excellent fence, and as such was much employed by Hyder-Alli in the bound-hedges of his forts, and other strong holds.

7. C. *chinensis. R.*

Scandent, armed. *Leaves* bipinnate; *pinnæ* and *leaflets* from two to four pairs, the latter oval and oblong, both ends obtuse lucid. *Petioles* and *petiolets* armed.

Introduced from China, into the Botanic garden at Calcutta, where it has now been for these five or six years and has not yet blossomed.

8. C. *bonduc. R.*

Scandent, armed. *Leaves* bipinnate. *Pinnæ* from four to eight pair; *leaflets* from six to seven pair, oval, lucid, mucronate.

Guilandina bonduc. *Willd.* 2. 534.

From Sumatra this very large species has been introduced into the Botanic garden at Calcutta without having blossomed, though in perfect health, and of great extent.

9. C. *resupinata. R.*

Arboreous, subscandent, armed. *Leaves* bipinnate; *pinnæ*, and *leaflets* many-paired; common petiole armed on the underside. *Stipules* minute, caducous. *Racemes* axillary. *Flowers* resupine. *Legume* two-seeded.

A native of the Moluccas, and reared in the Botanic garden at Calcutta from seed received from those islands in 1798. It blossomed for the first time in the month of September, 1800, and ripened its seeds the March following.

Trunk tolerably erect, though rather too weak to support itself at its present age, every part thickly armed with numerous, short, very sharp prickles. *Branches* numerous, some scandent, some spreading or drooping; height of the whole plant at present about twelve feet. *Leaves* alternate, bipinnate, from six to twelve inches long. *Pinnæ* about twelve pair, opposite, from one to two inches long. *Leaflets* opposite, from eight to twelve pair, obliquely oval, entire, smooth on both sides; about one-third of an inch long. *Petioles* common, round, villous, armed with recurved prickles between the pinnæ on the under side, and a gland between each pair on the upper. *Stipules* filiform, very small, caducous. *Racemes* axillary, solitary, and generally simple, spreading, shorter than the leaves. *Pedicels* solitary, one-flowered, round, smooth, slender, about an inch long. *Flowers* resupine,

numerous, bright yellow, and though not small, they are more so than any other Indian species of this genus I have yet met with. *Bractes* most minute, one-flowered. *Calyx* smooth, coloured on the inside ; lower division of the border much larger than the rest ; the base only permanent. *Corol* the two lateral pair of petals nearly equal, roundish, expanding, short-clawed. The superior one smaller, ovate-cuneate, with a curled margin, and on the centre a tuft of wool, coloured with reddish veins. *Legumes* oblong, thick, fleshy on the margin, protuberant where the seeds are lodged. *Seeds* from one to three, round, smooth, brown, size of a marrow-fat pea.

10. C. *enneaphylla. R.*

Shrubby, scandent, armed. *Leaves* bipinnate. *Pinnæ* and *leaflets* from eight to ten-paired. *Panicles* terminal. *Legume* unarmed, winged on the back, five-seeded.

A native of the eastern parts of Bengal, where it blossoms about the beginning of the cold season. *Trunk* and larger branches stout, ligneous, climbing up and over large trees, and whatever else they meet with, armed with numerous, curved, sharp, black prickles, each inserted over the old woody parts, on a large, transversely oblong, subsolid tuberosity. *Bark* of the young shoots smooth, shining, deep green, armed with numerous smooth, sharp prickles. *Leaves* alternate, bipinnate, from nine to ten inches long. *Pinnæ* opposite, generally eight, nine, or ten pairs. *Leaflets* from eight to ten pairs, cuneate-oblong, rounded at both ends, entire, smooth on both sides ; from half an inch to one inch long. *Petioles* common, armed underneath ; with many, recurved, sharp prickles ; a pair of which is always placed at the insertion of the pinnæ, and sometimes a single straight one on the upper side between them. *Stipules* scarcely any. *Panicles* terminal, composed of many large, ascending racemes, of numerous, beautiful yellow fragrant flowers.

Calyx of five, subequal coloured, reflected, caducous divisions inserted on a permanent base. *Corol* papilionaceous; the upper three petals placed on the upper side resembling the banner, the lower pair resembling the wings, while the lower division of the perianth before it becomes quite reflected is not unlike the keel. *Filaments* ten, declined, woolly, alternately shorter. *Anthers* incumbent, brown. *Pistil* hid amongst the stamens. *Legume* unarmed, smooth; broad-lanceolate, thin on the back, enlarged by a membranous wing which is united by an elevated suture. *Seeds* five or six, oval, smooth, flattened.

11. C. *paniculata. R.*

Scandent, armed. *Leaves* bipinnate; *pinnæ* and *leaflets* three or four-paired. *Stipules* minute. *Panicles* terminal. *Legumes* obliquely oval, smooth, cuspidate, one-seeded.

Kaku-mullu. *Rheed. Mal.* 6. *t.* 19.

Guilandina *paniculata. Willd.* 2. 535. *Lamarck. Encycl.* 1. *p.* 430.

A native of various parts of India. It blossoms during the dry months of February and March. The seeds ripen in August and September.

Stem and *branches* ligneous, climbing up and over trees, &c. *Bark* smooth and green until the plants are several years old; every part armed with dreadfully sharp, strong, recurved chesnut coloured aculei which acquire an immense base like the point of the finger on the trunk and large branches of old plants. *Leaves* bipinnate, from six to twelve inches long. *Pinnæ* three or four pair, remote. *Leaflets* three pair, ovate-lanceolate, obtuse, entire, of a firm texture, polished on both sides, from one to two inches long. *Petioles* common and partial, armed on the underside, smooth, round, generally coloured on the upperside. *Stipules* very minute and soon falling off. *Inflorescence,* generally one terminal

panicle, or compound raceme, and one or two simple, single racemes from the axils next the panicle. *Bractes* ovate-lanceolate, but dropping long before the flowers expand. *Flowers* numerous, pretty large, yellow and fragrant. *Legume* obliquely oval, smooth, compressed, cuspidate. *Seed* solitary.

12. C. *tortuosa. R.*

Armed, subarboreous, with a long, weak, straggling trunk, and branches. *Leaves* bipinnate; *pinnæ* and *leaflets* numerous; common petiole armed. *Racemes* axillary. *Legume* from three to four-seeded, twisted, and contracted between the seeds.

This dreadfully armed species is a native of the Island of Sumatra. From thence the seeds were sent by Dr. Campbell, to the Botanic garden at Calcutta, in 1796. Now, October 1800, the trees are about fifteen feet high, with weak, slender trunks, and few still weaker subscandent branches, armed with numerous very sharp somewhat incurved, subulate prickles. It blossoms in October and the seeds are ripe in February.

Leaves bipinnate, a foot or more long. *Pinnæ* from fifteen to twenty pair, opposite. *Leaflets* from twenty to forty pairs, opposite, tapering from the base to an obtuse point, smooth, firm, and shining, about half an inch long, and one-eighth of an inch broad. *Petioles* common, keeled on the upperside, and armed with small recurved prickles underneath. *Racemes* axillary, erect, solitary, generally simple, subcylindric, rather longer than the leaves. *Flowers* scattered, very numerous, large, yellow, slightly streaked with red near the base of the petals. *Bractes* minute, caducous. *Calyx* here the lower division is uncommonly large. *Corol* the two pairs of lateral petals nearly equal, and almost round, the upper one much smaller, deeply emarginate, coloured, having a long claw. *Filaments* woolly, alternately smaller

and shorter. *Legume* linear-oblong, swelled at the seeds, considerably twisted. *Seeds* from two to five, hard, smooth, of a dark blackish brown, size of a large pea.

13. C. *Sumatrana. R.*

Scandent, armed. *Leaves* bipinnate, no stipules; *petioles* armed on the under side. *Racemes* cauline, axillary, or terminal. *Calyx* cylindric, confining the petals. *Filaments* naked. *Legume* winged on the back.

Introduced into the Botanic garden at Calcutta from Sumatra where it is held in as much dread as the *Kantuffu* is in Abyssinia.

Trunk scarcely any, but many stout, woody branches climbing up and over trees to a great extent. These are covered with dark brown *bark*, and armed with numerous, strong, sharp, recurved prickles, the largest of them are generally in stipulary pairs. *Leaves* alternate, bipinnate, from one to two feet long. *Pinnæ* from three to six pair, opposite. *Leaflets* from six to twelve, short-petioletted, alternate, oval, entire, smooth on both sides, from one to two inches long. *Petioles* common, and of the *pinnæ* armed on the underside with sharp, recurved prickles otherwise smooth and polished like every other young part of the plant. *Stipules* none, but a brown smooth gland in their place. *Racemes* very large, compound, or simple, from the naked ligneous branches, or from the axils, or they are terminal. *Flowers* numerous, drooping, pretty large, of an orange colour tinged with pink. *Bractes* minute, caducous, large before the flowers expand. *Calyx* subcylindric, the inferior division a little longer, base permanent. *Petals* subclavate, the superior one rather larger and more beautifully coloured, all are only a little longer than the calyx and inserted with the stamina a little above its base. In this species the great length of the calyx prevents the petals from expanding. *Filaments* ten, alternately a little shorter, ascending, smooth. *Anthers*

ovate, two-lobed. *Germ* obliquely ovate. *Style* the length of the stamina. *Stigma* simple. *Legume* oblong, thin, with a broad membranaceous margin along the upper edge, this wing is about one-third the breadth of the whole and united to the seed-bearing body of the legume by a suture which is somewhat elevated like the nerve of a leaf. *Seeds* from one to three or four, small, ovate, compressed, coloured and smooth.

14. C. *inermis. R.*

Unarmed. *Leaves* bipinnate; *pinnæ* as far as ten pair; *leaflets* as far as twenty. *Panicles* terminal, ferruginous. *Petals* base of the filaments, and germ very woolly.

A native of the Moluccas. The legume not seen.

15. C. *lacerans. R.*

Shrubby, scandent, dreadfully armed. *Leaves* bipinnate. *Calyces* coloured like the corol. *Legumes* unarmed, winged, one-seeded.

Teling. Walekadooda. A large climbing species, most completely armed. It is common in wild, woody, unculvated places, and flowers during the first part of the wet season.

Stem and longer *branches* climbing, woody, covered with scabrous, ash-coloured *bark*; the smaller *branches* less so, and armed with innumerable, large, strong, sharp, recurved prickles; the tender shoots purple. *Leaves* alternate, abruptly bipinnate, from five to six inches long and three broad. *Pinnæ* opposite, from four to eight pair. *Leaflets* opposite, from four to eight pair, oval, entire, smooth, half an inch long and a quarter of an inch broad. *Petioles* common, smooth, armed with a pair of recurved prickles below each pair of pinnæ, and a single erect one opposite to them on the upper side. *Racemes* axillary, and only from the extreme leaves, which gives them the appearance of a large terminal leafly panicle. *Flowers*

middle sized, numerous, white, beautifully tinged with red. *Calyx* coloured, as large as the corol.

HYPERANTHERA. Vahl.

Calyx five-cleft. *Corol* irregular, five-petalled. *Stamina* unequal. *Capsule* superior, one-celled, three-valved. *Seeds* winged.

H. *moringa. Willd.* 2. 536. *Asiat. Res.* 11. 168.

Arboreous. *Leaves* supradecompound. Half the stamina sterile.

Guilendina *Moringa. Linn. Jacq. &c.*

Anoma Moringa. *Lourier. Cochin Ch.* 343-4.

Mouringou. *Rheed. Mal.* 6. *f.* 11.

Sobhanjana. *Asiat. Res.* 4. *p.* 277.

Beng. Sujuna.

Tam. and *Teling.* Morunga.

Common in a cultivated state all over India. The leaves, flowers, and tender seed-vessels, are eaten by the natives in their curries.

A red flowered species, or variety is found in the vicinity of Malda, its Sanscrit name *Mudhoo-shigroo.*

GÆRTNERA. R.

Calyx five-leaved. *Corol* irregular. *Petals* five, reflexed. *Germ* three-celled, cells one-seeded, attachment subsuperior. *Capsules* three, superior, each three-winged, and one-seeded. *Embryo* inverse, without perisperm.

1. G. *racemosa. Willd.* 2. 551. *R. Corom. pl.* 1. *p.* 19. *t.* 18.

Leaves ovate-oblong, acute. Two exterior petals oblong.

Antimucta. *Asiat. Res.* 4. *p.* 282.

Banisteria *Bengalensis. Linn. sp. pl.* 611.

Madab lota. *Sonnerat. N.* 2. *p.* 238. *t.* 135.

Molina racemosa. Lamarck. *Encyclop.* 4. 227. *and Cavan. Diss.* 9. *t.* 263.

Sida-pou. *Rheed. Mal.* 6. *t.* 59.

Teling. Vedal-tshittu.

Beng. Madhu*va*-lu*t*a, or Madhu*bulu*ta, also Mal tee.

Found in various parts of India. It flowers during the rainy and cold season. The blossoms are uncommonly beautiful, and exceedingly fragrant.

2. G. *obtusifolia. R.*

Leaves oblong, obtuse. All the petals round, the lower two expanded, the upper three reflex.

A native of China, and from thence brought to the Botanic garden at Calcutta, prior to 1793. Like *racemosa*, it is a large, scandent, somewhat twining shrub; running over trees of considerable size. Flowering time the month of March. Its blossoms are smaller, less beautiful, and not so fragrant, as those of *G. racemosa*.

Flowers of five petals, the lower two, more expanded, the upper three completely reflexed, all elegantly fringed round the margins, the uppermost one has a rosy tinge round a yellowish base, where two curved hornlets project in toward the stamina, the other four are white. *Filaments* unequal, ascending in a beautiful curve; the lower one much larger, and longer. *Germ* superior, three-lobed, each lobe crowned with one larger, and two smaller, semilunar, hairy processes, which in the fertile lobes become wings; each lobe contains a single seed attached to the inner and upper angle of the cell. *Style* ascending, nearly as long as the long filament. *Stigma* simple, incurved. *Samara*, rarely more than one of the three come to maturity, globose, villous, of a soft chaffy texture, three-winged; *wings* lanceolate, scariose, one of them larger, between it and the base is a small scar, the mark of the attachment of the style. *Seed* single, round. *Integument* single, tender, brown, attached to the samara under the

remains of the style. *Perisperm* none. *Embryo* inverse, yellowish. *Cotyledons* conform to the seed, unequal, and sometimes divided. *Plumula* two-lobed. *Radicles* oval, curved up, and pointing to the vertex of the seed.

ADENANTHERA. Schreb. gen. n. 707.

Calyx five-toothed. *Corol* five-petalled; a globular gland crowns the apex of each anther.

1. A. *pavonina. Willd.* 2. 550.

Unarmed. *Leaves* bipinnate; *leaflets* smooth. *Racemes* axillary.

Sans. Koochunduna.

Beng. Ructa chundan, Runjuna, which means red sandal, whereas we consider *Pterocarpus Santalinus* to be the tree which yields that wood.

Mandsjadi. *Rheed. Mal.* 6. *t.* 14.

Corollaria parvifolia. *Rumph. Amb.* 3. *t.* 109.

Found in various forests over most parts of India. It grows to be a very large tree with an erect trunk, and when old, dark-coloured scabrous bark; while young, smooth. The interior wood of large trees is of a deep red colour, very hard and durable.

Leaves alternate, abruptly bipinnate, from one to three feet long. *Pinnæ* opposite, generally from four to six pair, each from four to twelve inches long. *Leaflets* alternate, short-petioletted, from four to ten or twelve pair, oval, with the margins waved, smooth on both sides, from one to two inches long. *Petioles* round, smooth, coloured. *Racemes* terminal and from the exterior axils, solitary, cylindric, about a span long. *Flowers* numerous, small, yellow, fragrant. *Bractes* minute and caducous. *Calyx*, &c. parts of fructification as in the genus, only the petals adhere slightly at the base, and there the filaments are inserted.

The coloured wood of this tree is used for a variety of economical purposes. The smooth, oval, bright scarlet coloured, hard seeds are strung on a thread and worn by the women round their necks in many parts of India. The wood yields a dye, and is employed by the Brahmins after religious bathing in marking their foreheads; for which purpose it is obtained, by rubbing the wood on a wet stone.

2. A. *aculeata. R.*

Arboreous, prickly. *Leaves* bipinnate, smooth. *Legumes* cylindric, replete with a farinaceous substance, in which the seeds are found.

Prosopis *spicigera. Willd.* 2. 547. *R. Corom. pl.* 1. *N.* 63.

Somi. *Wilford in Asiat. Res.* 4. *p.* 363. Sir William Jones's *Sami of the same vol. page* 307, is very different; viz. *Mimosa farnesiana*, a plant he never intended for *Sami.*

Prosopis *aculeata. Asiat. Res.* 4. *p.* 405.

Prosopis *aculeata Kön. Mss.*

Teling. Chanee.

This grows to the size of a tree. It is a native of most parts of the coast of Coromandel, chiefly on low lands at a considerable distance from the sea; it is also found in some parts of Hindoostan. It flowers during the cold and beginning of the hot seasons.

Trunk tolerably erect. *Bark* deeply cracked, of a dirty ash colour. *Branches* irregular, very numerous, forming a pretty large, very shady head. *Prickles* scattered over the small branches, in some trees wanting. *Leaves* alternate, generally bipinnate, from two to three inches long. *Pinnæ* from one to four, when in pairs, opposite, and having a gland between their insertions. *Leaflets* opposite, from seven to ten pair, obliquely lanceolate, smooth, entire, about half an inch long, and one-sixth broad. *Stipules* none. *Spikes* axillary, several together, filiform,

nearly erect. *Bractes* minute, one-flowered, caducous. *Flowers* numerous, small, yellow, single, approximate. *Calyx* below, five-toothed. *Filaments* united at the base. *Anthers* incumbent and white, with a gland on the apex of each which falls off soon after the flower expands. *Style* crooked. *Stigma* simple. *Legume* long, pendulous, not inflated. *Seeds* many, lodged in a brown mealy substance.

The pod of this tree is the only part used; it is about an inch in circumference, and from six to twelve long; when ripe, brown and smooth, containing besides the seeds a large quantity of a brown mealy substance which the natives eat. Its taste is sweetish and agreeable; it may therefore be compared to the Spanish *Algaroba*, or *Locust tree (Ceratonia siliqua.)*

CYNOMETRA. Linn.

Calyx four-leaved. *Corol* five-petalled. *Legume* fleshy, lunate, one-seeded. *Embryo* centripetal, no perisperm.

C. *polyandra. R.*

Leaves pinnate. *Branchlets* floriferous. *Flowers* polyandrous.

Peng is the vernacular name in Silhet, where it grows to be a very large and useful timber tree. Flowering time March and April. The seeds ripen in July and August.

PETALOMA. Schreb. gen. n. 1750.

Calyx five-toothed. *Petals* five, the stamina inserted on the calyx. *Berry* inferior, one-celled. *Seeds* from one to four.

P. *alternifolia. R.*

Leaves alternate, obovate-cuneate, emarginate. *Spikes* axillary.

Kada Kandel. *Rheed. Mal. vol.* 6. *t.* 37.

Beng. Kripa.

A pretty large tree, a native of the Delta of the Ganges, where the spring-tides rise so high as to overflow the ground on which they grow. Flowering time the hot season.

Trunk straight, *bark* scabrous. *Branches* numerous, erect, and ascending, with dark brown, smooth, *bark*. *Leaves* alternate, subsessile, obovate, emarginate, slightly crenate, almost veinless, smooth on both sides, and fleshy, about two inches long, and one broad. *Stipules* none. *Spikes* axillary, solitary, generally simple, about as long as the leaves, each bearing from six to twelve, alternate, small, white flowers. *Bractes*, a very minute one at the base of each germ, and two growing on the opposite sides of its middle. *Calyx* five-toothed; *teeth* rounded and frequently unequal. *Petals* five, inserted within the fissures of the calyx, oblong, entire, first expanding, then recurved. *Filaments* ten, alternately a little longer, about the length of the petals. *Anthers* ovate. *Germ* inferior, ovate, compressed. *Style* awled, as long as the *stamens*. *Stigma* acute. *Pericarpium* a small ovate, oblong, compressed, drupaceous berry, with a single linear, oblong seed.

The wood is remarkably strong and durable; it is much used for posts and other parts of the houses of the natives, but its chief consumption about Calcutta is for fuel, large quantities being brought daily from the Sunderbunds (low parts of the Delta,) for that purpose.

I doubt if this can with propriety be considered a *Petaloma*. The habit does not by any means agree. It will probably form a genus.

RUTA. Schreb. gen. n. 725.

Calyx five-parted. *Petals* concave. *Receptacle* of the germ impressed with ten melliferous pits. *Capsule* lobate.

R. *graveolens. Willd.* 2. 542.

Leaves supra-decompound; *leaflets* oblong, the terminal ones obovate. *Petals* entire.

Arab. Sudal.

Sans. Somalata, also Brahmee.

Hind. Saturi, also Arooda.

It is I presume a native of Persia, and the western parts of Asia. In Bengal, it is found in gardens only where it flowers during the cold season.

MURRAYA. Schreb. gen. n. 717.

Calyx five-toothed. *Corol* campanulate, five-petalled. *Germ* two-celled, with two subpendulous ovula in each, attached to the top of the axis. *Berry* superior, two-celled. *Seeds* solitary, woody. *Embryo* inverse without perisperm.

1. M. *exotica. Mant.* 393. *Willd.* 2. *p.* 518.

Leaves alternately pinnate; *leaflets* from five to seven, obliquely obovate, oblong. *Corymbs* terminal, globular, crowded.

Chalcas *paniculata. Mant.* 68.

Camunium Sinense. Rumph. Amb. 5. *t.* 18. *f.* 2.

Marsana *buxifolia.* Sonnerat it. 3. 192. *t.* 139.

Teling. Naga golunga.

It grows to be a small tree, though in general found in the state of a large, erect, very ramous shrub, with a light ash-coloured *bark.* It was brought from China to this coast many years ago, where it continues to be cultivated in gardens; but I have found it very common wild, amongst the mountains in the Circars. It is from the wild plant I take my description. It flowers chiefly during the hot season.

Leaves scattered, pinnate with an odd one. *Leaflets* generally three pair, alternate, obovate-oblong, emargi-

nate, smooth, of a shining deep green, from one and a half to two inches long, and about one broad, the inferior smallest. *Petioles* glandular, round. *Corymbs* terminal, globular, crowded with pretty large, beautiful, pure white, exquisitely fragrant flowers. *Calyx* one-leaved, five-parted, glandular, divisions erect, acute. *Corol* five-petalled, campanulate. *Petals* lanceolate, spreading at top. *Nectary* a fleshy ring surrounding the base of the germ. *Filaments* ten, alternately longer, and larger. *Anthers* oblong. *Germ* superior, oblong, glandular, two-celled, with two *ovula* in each vertically attached to the upper half of the partition. *Style* thick, length of the stamens. *Stigma* large, glandular. *Seeds* one, or two, oblong, pointed above, flat on one side, woolly. *Embryo* inverse, and without perisperm.

2. M. *Sumatrana. R.*

Leaves alternately pinnate ; *leaflets* from five to seven, ovate and ovate-oblong, emarginate. *Flowers* terminal.

A large shrub, a native of Sumatra, and from thence sent to the Botanic garden at Calcutta, by Dr. C. Campbell, under the name *Chalcas;* it is much thinner of branches, has larger leaves, and fewer but much larger flowers, than *exotica*, and when growing together most conspicuously different in habit. Flowers, and ripens its seed at various times through the year.

BERGERA. Schreb. gen. n. 718.

Calyx five-toothed. *Corol* five-petalled, expanding. *Germ* two-celled, one ovula in each attached to the axis. *Berry* superior, one or two-seeded. *Embryo* inverse, without perisperm.

1. B. *Königii. Willd.* 2. 549.

Leaflets obliquely lanceolate, serrate.

Beng. Bursunga.
Teling. Kari-Vepa.
Tam. Kamwepila.

This grows to be a small tree. Is a native of the mountainous parts of the Coast, and is also cultivated in gardens for the sake of its leaves; they being a principal ingredient in the country stews called curries. Its flowering time is the hot season.

This tree is so well described by the late Dr. König, in the *genera* and *species* plantarum of Linnæus, that it is unnecessary for me to say any thing on that head.

The leaves, as observed above, are a very principal ingredient in curries; and when they cannot be had fresh, are used dry, for they retain their flavour very well in that state, and are to be had in every market. They have a peculiar flavour, which I cannot describe; at first it is rather disagreeable, but most people soon become perfectly reconciled to, if not fond of it.

The bark and root are used as stimulants by the native physicians. Externally they are also used to cure eruptions and the bites of poisonous animals.

The green leaves are prescribed to be eaten raw for the cure of dysentery; they are also bruised and applied externally to cure eruptions.

2. B. *integerrima. Buch.*

Arboreous. *Leaflets* entire, with long taper points.

Bun kooncha of the natives of the eastern banks of the mouth of the Megna, where the tree grows. It was introduced into the Botanic garden by Dr. Buchanan in 1797; now, January 1800, they have advanced to the size of small ramous trees, and are at present in blossom.

Leaves alternate, petioled, pinnate, with single terminal *leaflets*, from six to eighteen inches long. *Leaflets* opposite or subalternate, short-petioletted, obliquely lanceolate, oblong, waved, ending in long, fine, tapering points,

tolerably smooth above, and somewhat villous underneath, differing in size, the exterior or largest above six inches long and two broad. *Petiolets* and *petioles* round, and a little villous. *Corymbs* terminal, decompound, large, ramifications villous. *Flowers* short-pedicelled, erect, numerous, white, emitting a strong, heavy, offensive smell. *Bractes* very minute. *Perianth* five-toothed. *Petals* five, lanceolate, expanding. *Stamens* alternately longer. *Germ* superior, oval, resting on a fleshy receptacle. *Style* clavate. *Stigma* subrotund. *Berry* the size of a large pea, oval, when ripe yellow. *Seed* solitary, nearly as large as the berry.

LIMONIA. Schreb. gen. n. 720.

Calyx four or five-toothed. *Corol* four or five-petalled. *Germ* from two to five-celled; *cells* from one to two seeded, attachment interior. *Berry* superior, few-seeded. *Embryo* inverse, without perisperm.

1. L. *bilocularis. R.*

Shrubby, armed. *Leaves* elliptic, emarginate, glossy. *Flowers* axillary, and terminal, subsessile, decandrous. *Germ* and *berries* two-seeded.

A very ramous, well armed, rigid shrub, very like *Limonia monophylla*, but always smaller; a native of Coromandel. Flowers in June; the seed ripens in September.

Spines axillary, solitary, long, strong and sharp. *Leaves* alternate, short-petioled, reflexed, elliptic, somewhat crenulate, emarginate, firm and glossy, abounding in minute cells, and odorous like the leaves of the orange, &c. when bruised; about an inch and a half long, and three quarters of an inch broad. *Stipules* axillary, solitary, by the base of the spines, subulate. *Flowers* axillary and terminal, in little, subsessile clusters, small, pure white. *Bractes* minute, subulate. *Calyx* cup-shaped, five-tooth-

ed. *Petals* five, oblong. *Nectary* a crenulate, white fleshy cup, round the lower half of the germ. *Filaments* ten, alternately shorter, lanceolar, thick, and distinct, inserted between the nectary and petals. *Anthers* ovate. *Germ* superior, two, very rarely three-lobed; two, rarely three-celled with one ovula in each, attached to the middle of the partition; *style* short and thick. *Stigma* large, nearly round, and clammy. *Berries* spherical, of the size and appearance of a ripe *sloe*, succulent, two-celled. *Seed* solitary. *Integument* single, thin, and clear. *Perisperm* none. *Embryo* inverse, green. *Cotyledons* conform to the seed.

2. L. *monophylla. Willd.* 2. 571. *Corom. pl.* 1. *N.* 83.

Shrubby, armed with straight spines. *Leaves* simple. *Nectary* campanulate, antheriferous.

Trichilia *spinosa. Willd.* 1. 2. *p.* 554.

Limonia *pumila. Burm. zeyl.* 143. *t.* 65.

Mal-Naregam. *Rheed. Mal.* 4. *t.* 12.

Teling. Adivi-nima, *(wild lime.)*

This plant is a native of our large, extensive forests over the Coast of Coromandel, where it often grows to be a small tree, though oftener found in the state of a large shrub. Flowering time about the rainy season.

Trunk irregular. *Bark* pretty smooth, of a greenish ash colour. *Branches* numerous, very irregular, and very rigid. *Thorns* single, axillary, very strong and sharp; in some plants entirely wanting. *Leaves* alternate, short-petioled, oblong, emarginate, smooth, firm, two or three inches long, and one or one and a half broad. *Stipules* subulate. *Racemes* axillary, short. *Bractes* subulate, small. *Calyx* from four to five-parted, permanent. *Corol* four or five-petalled; *petals* equal, oblong, expanding. *Nectary* cylindric, *mouth* ten-toothed; *teeth* alternately larger. *Filaments* none; *anthers* resting on the teeth of the nectary. *Germ* superior, globular, generally four-celled,

with two *ovula* in each, attached to the axis. *Style* length of the nectary. *Stigma* three or four-lobed. *Berry* the size of a nutmeg, very much like a lime (hence the Telinga name, *wild* lime) generally four-celled. *Seeds* generally solitary, that is one in each cell.

The flowers of the above described plant agree with those of *Melia*, *Trichilia*, *Turraea*, and *Swietenia*; their pericarps must be depended on to distinguish the genera.

3. L. *citrifolia*. R.

Shrubby; armed with recurved spines. *Leaves* simple, elliptically oval, entire, obtusely acuminate. *Flowers* axillary. *Berries* ovate, few-seeded.

A very ramous, rigid, well-armed shrub, of five or six feet in height, a native of the forests of Chittagong, and with the other armed species, well adapted for fences. Flowering time the hot season.

Young shoots polished. *Thorns* axillary, solitary, short, somewhat recurved. *Leaves* alternate, round-petioled, elliptic, with an obtuse, somewhat lengthened point, entire, smooth, but marked with numerous pellucid points, as in many *Aurantiæ*; from four to five inches long, and from two to three broad. *Stipules* none. *Flowers* small, white, short-peduncled, axillary. *Bractes* minute, about the insertion of the peduncles, and on them. *Calyx* five-toothed, having its substance marked with pellucid points. *Petals* five, oblong, smooth. *Filaments* ten, distinct, short, inserted round the base of the germ. *Anthers* linear, erect. *Germ* ovate-oblong, five-grooved, on the outside five-celled, each cell containing two *ovula* attached to the axis. *Style* thick and short. *Stigma* sub-peltate. *Berry* ovate, of the colour and appearance of a lime, even to the little green cells in the cortex. *Seeds* from one to four, separated by some few small fibres only, which are scarcely to be traced when dry, oblong, having the sides agreeing in shape with the number in the berry. *In-*

tegument single, membranaceous. *Perisperm* none. *Embryo* inverse. *Cotyledons* conform to the seed. *Radicle* superior.

4. L. *scandens. R.*

Shrubby, scandent, armed. *Leaves* ternate; *leaflets* lanceolar, entire, smooth. *Berries* three-seeded.

Sans. Luvunga-luta.

Lung-phool of the natives about Silhet.

A very extensive, powerful, scandent shrub, a native of the hills about Silhet and Chittagong, where it blossoms in March and April, and the seeds ripen in September.

Trunk or branches several from the same root, long, thick, stout, ligneous, scandent, armed. *Bark* pretty smooth and ash-coloured. *Thorns* axillary, solitary, strong, long, acute, and a little recurved. *Leaves* alternate, ternate. *Leaflets* lanceolate, entire, smooth, shining and firm, from six to seven inches long, having both surfaces marked with minute, dark green, glandular dots, or cells, though the smell, as in most leaves of this conformation, has nothing particular in it; when the plants are young, the leaves are simple. *Petioles* channelled, smooth, deep green like the leaves. *Peduncles* axillary, or from the naked branchlets below the leaves, each supporting from four to twelve, pedicelled, pretty large, white, fragrant flowers, in form of a raceme. *Calyx* one-leaved, cylindric, with the *mouth* cut into four short, truncate divisions. *Petals* four, linear oblong, fleshy, recurved. *Filaments* eight; the lower half united into a firm, fleshy tube. *Anthers* linear, incumbent. *Germ* conical, elevated on a fleshy receptacle, three-celled with two vertical *ovula* in each, attached to the axis. *Style* cylindric. *Stigma* entire, roundish. *Berry* oblong, somewhat three-lobed, size of a pigeon's egg, pretty smooth, pulp of a resinous nature, and odoriferous, three-celled. *Seed* solitary, oval, somewhat pointed at the a-

pex, covered with a single greenish-veined integument. *Perisperm* none. *Embryo* conform to the seed, inverse. *Cotyledons* oblong green, fleshy. *Plumula* two-lobed. *Radicle* ôvate, superior.

Previous to having seen the pericarpium of this plant, an incomplete description and drawing were sent to the Honourable the Court of Directors, under the name *Aitonia spinosa*. The discovery of the seed vessel, together with its structure, &c. convinces me it cannot belong to that genus, and seems to associate best with *Limonia*, *Murraya*, and *Triphasia*, and no doubt belongs to the seed, and divisions of Jussieu's natural order Aurantia.

5. L. *pentaphylla. Willd.* 1. 572. *R. Corom. pl.* 1. *p.* 60. *t.* 84.

Unarmed, shrubby. *Leaves* pinnate ; *leaflets* about five, subalternate, oblong, entire, smooth. *Berries* with one or two, rarely three, perfect seeds.

Teling. Gulunga.

Beng. Ash-shoura.

A very common shrub every where, and in flower and ripe seed all the year. The small white flowers are sweetly fragrant.

6. L. *arborea. R. Corom. pl.* 1. 60. *t.* 85.

Unarmed, arboreous. *Leaves* pinnate ; *leaflets* about five, oblong, serrate, smooth. *Berries* with one or two perfect seeds. *Teling.* Konda Gulunga.

A native of the Circar mountains.

7. L *crenulata. R. Corom. pl.* 1. *p.* 60. *t.* 86.

Arboreous, armed. *Leaves* pinnate ; *leaflets* from two to three pair, oblong, crenulate ; *petioles* winged. *Corols* four-petalled. *Berries* with from one to four cells, and one seed in each.

Limonia *acidissima*. *Mant.* 380. *Willd.* 2. 572.
Tsjerou-katou narigam. *Rheed. Mal.* 4. *t.* 14.
Teling. Torelega.

An elegant small tree, a native of Coromandel, Malabar, &c. Flowering time the hot season.

8. L. *pentagyna*. *R.*

Arboreous. *Leaflets* from five to nine, sublanceolate. *Racemes* axillary, compound. *Nectary* short, crenulate. *Berry* with from one to five lobes, and as many seeds.

Teling. Chitreka.

A large timber tree, a native of the Circars, Bengal, &c. and in flower during the hot season.

COOKIA. Retz.

Calyx five-toothed. *Corol* five-petalled. *Germ* elevated on a receptacle, five-celled; cell two-seeded; attachment interior. *Berry* superior, five seeded. *Embryo* inverse, no perisperm.

1. C. *punctata*. *Willd.* 2558. *Sonnerat. it.* 2. 181. *t.* 130.
Sonneratia *punctata*. *Syst.* 1. 675.
Quinaria *lansium*. *Lour. Cochin Ch.* 334.
Chin. Whung-pi.

A Chinese fruit tree, now common in Bengal, and various other parts of India. Flowering time the beginning of the hot season; the fruit ripe in three or four months after.

Trunk straight; *branches* numerous, suberect; *bark* pretty smooth, ash-coloured, that of the young shoots green, and scabrous. *Leaves* alternate, pinnate, with an odd one. *Leaflets* three or four pairs, nearly opposite, short-petioletted, obliquely oblong-oval, entire, of a firm texture, smooth on both sides, while the under side of the veins are scabrous. *Petioles* round, hairy, and

scabrous. *Stipules* none. *Panicles* terminal, large, erect, composed of many, suberect, compound racemes, covered with rough, glandular excrescenses. *Flowers* numerous, small, white. *Bractes* small, falling. *Calyx* inferior, cup-shaped, five-toothed, outside glandular. *Petals* five, lanceolato-oblong, spreading, concave. *Filaments* ten, rather shorter than the petals, recurved, inserted with broad bases round the bottom of the receptacle. *Anthers* roundish, incumbent. *Germ* superior, short-pedicelled, five-celled with two *ovula* in each, attached to the thickened middle of the axis. *Style* short, and thick. *Stigma* of five obtuse lobes. *Berry* the size and appearance of a goose-berry, skin tough, and replete with cells filled with a fragrant green balsam, five-celled. *Seed* solitary, oblong. *Integument* single, thin, colourless. *Perisperm* none. *Embryo* inverse, green. *Cotyledons* conform to the seed. *Plumula* conical, bidentate. *Radicle* cylindric, superior.

The fruit, and indeed every part of the tree, possess a peculiar kind of agreeable fragrance, which is something of a Terebinthinaceous nature.

BOSWELLIA. (R.)

Calyx five-toothed. *Corol* five-petalled. *Nectary* a crenulated fleshy, staminiferous cup, surrounding the lower part of the germ. *Germ* superior, three-celled, cells two-seeded, three-valved. *Seed* solitary, membrane winged. *Embryo* inverse, folded, without perisperm.

Note. The genus is so named, in memory of the late Dr. John Boswell, Physician in Edinburgh.

1. B. *thurifera. Colebrooke in Asiat. Res.* 9. 317. *and* 11. 158.

Leaflets serrate. *Racemes* simple, axillary. *Filaments* inserted on the exterior margin of the nectary.

Canarium *hirsutum*, *Willd.* 4. 760.

Canarium *odoriferum; hirsutum. Rumph. Amb.* 2. *t.* 51.

Sans. Salaci the tree, and Koondooroo the drug, or incense.

Beng. Salai the tree, and Koondooroo, or Gundhurus the drug.

Hind. Luban.

A large timber tree, a native of the mountainous parts of Coromandel, Bundelkhund, &c. Flowering time the hot season, March and April, and the seeds ripen about the end of the year. From the researches of Mr. Colebrooke, above quoted, in the 11th Vol. of the Asiatic Researches it appears that the *oblibanum* or Frankincense of the ancients is the produce of this tree, and not of *Juniperus lycia*, as hitherto thought.

2. B. *glabra. R. Corom. pl.* 3. N. 207.

Leaflets smooth, serrulate, or entire. *Racemes* terminal, subpanicled. *Filaments* inserted into the base of the nectary on the outside.

Canarium *odoriferum læve. Rumph. Amb.* 2. *t.* 50.

Canarium *balsamiferum. Willd.* 4. 760.

Teling. Googoolupoo-chittoo.

This as well as *thurifera* yields a resin, which is used as incense, and for pitch, in some parts of India. It is a native of the mountainous districts of Coromandel where it blossoms during the dry season.

BUCHANANIA. (R.)

Calyx five-toothed. *Petals* five. *Nectary* double; the exterior a crenulate cup between the filaments and germ; the inner four subulate bodies are one side within the former. *Germ* superior, one-celled, one-seeded; attachment from the bottom of the cell to the apex of the ovula. *Drupe* with a one-seeded nut. *Embryo* transverse, no perisperm.

1. B. *latifolia. R.*

Arboreous. *Leaves* oval.

Sans. and *Beng.* Piyala, the name of the tree.

Hind. Peeyar, Peeyal, Piyala.

Sans. Chirika, the name of the fruit.

Beng. Chirongi, the name of the fruit, as sold in the Bazars.

Teling. Charoo-mamudee.

Mowdo, or Kati mango-marum of the Tamuls. It must have been the Telinga and Tamul names, which induced Konig to call this tree Mangifera silvestris.

Larmzon. *Buch. in Asiat. Res.* 5. *p.* 123.

A large tree, a native of the mountainous parts of the coast. It flowers in January and February.

Trunk strait, thick, and of a great height. *Bark* scabrous. *Branches* numerous, spreading in every direction. *Leaves* alternate, though sometimes three-fold, short-petioled, oval, oblong, or obovate, obtuse, entire, of a hard texture, pretty smooth, above scabrous, below softer, six or seven inches long, and about four broad. *Stipules* none. *Panicles* terminal, and from the exterior axils, erect, branchy, conical. *Bractes* small, caducous. *Flowers* very numerous, small, of a whitish green. *Calyx* inferior, five-toothed, permanent. *Petals* five, oblong, spreading. *Nectary* double; *exterior*, a fleshy, ten-notched yellow ring surrounding the base of the germ; *interior*, consisting of four subulate bodies, placed on one side of the germ, and within the exterior ring; they are about as long as the whole pistil, and look like four additional styles. *Filaments* ten, equal, spreading, nearly as long as the petals, inserted into the outside of the base of the exterior nectary. *Anthers* ovate. *Germ* conical, hairy, one-celled, containing one *ovula*, attached to the bottom of the cell by a long curved cord, which takes nearly a turn round the ovula, and enters it on the middle of the opposite side. *Style* subulate. *Stigma* simple. *Drupe*

size of a cherry, a little compressed, smooth, when ripe, black. *Nut* very hard, one-celled, two-valved. *Seed* solitary covered with a double integument. *Perisperm* none. *Embryo* transverse.

The wood of this tree is used for various purposes, and the kernels are a very general substitute for almonds, amongst the natives.

2. B. *angustifolia. R.*

Arboreous. *Leaves* linear-oblong, apex rounded.

A native of the south end of the Peninsula of India. Flowers in June, and the fruit takes nearly one year to come to maturity.

3. B. *lancifolia. R.*

Arboreous. *Leaves* lanceolate, obtuse pointed, lucid, entire. *Panicles* terminal.

A large, and tall tree, a native of Chittagong. The tender, unripe fruit is eaten by the natives in their curries.

WALSURA. (R.)

Calyx five-toothed. *Corol* five-petalled. *Nectary* double; *exterior* subcylindric, bearing the anthers in its mouth; *interior* a fleshy ring round the germ. *Germ* superior, two-celled; cells two-seeded; attachment interior. *Berry* one-seeded. *Embryo* erect, no perisperm.

1. W. *robusta. R.*

Leaves quinate-pinnate; *leaflets* lanceolate. *Panicles* terminal and axillary. *Filaments* distinct, (consequently the exterior nectary is not found.)

*U*pphing, the vernacular name in Silhet, where it grows to be one of their largest timber trees; having a trunk seven feet in circumference, and other parts in proportion.

It flowers in March and April, and the seed ripens in June.

Young shoots rough with scabrous specks, but void of pubescence. *Leaves* alternate, unequally pinnate, some ternate; from six to nine inches long. *Leaflets* generally five. The pairs opposite, from oblong to lanceolate, acuminate, entire, smooth; from four to five inches long, and from one to two broad. *Petioles* marked with the same sort of elevated rough white specks that are to be found on the young shoots. *Panicles* terminal, and from the exterior axills, length of the leaves, much crowded, and very dense; their numerous ramifications scarcely villous. *Bractes* minute. *Flowers* numerous, rather small, and white. *Calyx* five-parted; *segments* nearly equal, small, and oval. *Petals* five, oblong, spreading, a little villous. *Nectary* a large fleshy crenate ring round the base of the germ, within the filaments. *Filaments* ten, broad towards the base, but not in the least united, tapering regularly to the apex, which is very slender; they are inserted under the exterior part of the nectary, and are alternately a little shorter. *Anthers* small, oval. *Germ* superior, ovate, two-celled; *ovula* two in each cell, attached to the middle of the partition. *Style* short. *Stigma* peltate. *Berry* oval, size of a small olive, resting on the permanent corol, calyx, and stamina, one-celled. *Cortex* rather thin, and bright grey. *Seed* solitary, conform to the berry, before maturity or when imperfectly ripe, a pretty large quantity of a clear, very succulent exterior envelope, or aril is found, but when ripe it is scarcely to be seen. *Integuments* besides the aril, single. *Perisperm* none. *Embryo* straight, inverse. *Cotyledons* conform to the seed. *Radicle* obovate-truncate, superior.

2. W. *piscidia. R.*

Leaves subternate; *leaflets* subternate oblong, obtuse.

Teling. Wallursi.

Tam. Walsura.

A tree, a native of the mountainous parts of the Circars. It flowers during the cold season. Specimens of this, in the Banksian herbarium, are referred to *Trichilia.*

Trunk erect. *Bark* ash-coloured; in old trees deeply cracked. *Branches* very irregularly scattered, forming a thin head. *Leaves* alternate, petioled, subpinnate. *Leaflets* from two to four, alternate, oblong, entire, frequently emarginate, above smooth, of a deep, shining green, below whitish, from two to three inches long, and about one broad. *Stipules* none. *Flowers* numerous, small, of a dirty yellowish white colour, collected on small terminal panicles. *Bractes* minute, falling. *Calyx* interior, five-cleft, permanent. *Petals* five, equal, lanceolate, expanding. *Nectary* double; *exterior* cylindric, half the length of the petals, ten-cleft for two-thirds of its length; *divisions* emarginate, staminiferous; *interior*, a fleshy ring surrounding the base of the germ. *Filaments* ten, short, inserted into the notches of the divisions of the exterior nectary. *Anthers* oblong, erect. *Germ* roundish, sunk deep into the interior nectary, two, rarely three-celled with two *ovula* in each, attached to the partition. *Style* the length of the exterior nectary. *Stigma* large, turbinate. *Berry* oblong, downy, pulpy, one-celled. *Seed* one, large, oblong.

This tree has nearly the flowers of *Melia, Trichilia,* and *Swietinia,* but the fruit of *Murraya;* it may therefore constitute a new genus.

The wood serves for various economical purposes. I am informed by the natives, that if the bark in quantity is thrown into fish ponds, it soon kills the fish, which I believe is true, for it is rare to meet with a tree that has not been deprived of its bark. They do not esteem the fish the less wholesome, and it renders them easily caught, as they soon float, probably before they die; as

is the case when *cocculus Indicus* is employed. This is the second species of fish poison, employed by the natives of this country, to enable them to catch fish, with little or no trouble. The fruit of *Gardenia dumetorum*, was the first which has been already taken notice of.

3. W. *ternata. R.*

Leaves ternate; *leaflets* narrow-lanceolate. *Panicles* axillary. *Nectary* gibbous, with divisions alternately rounding and bidentate.

Tam. Kaka-walsura.

Teling. Chinna-wallursi.

A small tree growing on the sides of hills. It flowers during the hot season.

Trunk erect; *bark* smooth, rust colour. *Leaves* alternate, petioled, ternate. *Leaflets* narrow-lanceolate, equal, entire, above smooth, of a deep shining green, whitish underneath; from four to five inches long, and one broad. *Petioles* semicylindric, rust-coloured, two inches long. *Stipules* none. *Panicles* axillary, middle-sized. *Bractes* single, small, caducous. *Flowers* very numerous, small, milk white. *Calyx* and *corol* as in W. *piscidia*. *Nectary*, the *exterior* one gibbous, and having only the apex of every other division bifid; the intermediate one, rounded, and a little shorter. *Interior* salver-shaped, with a large, high, callous margin. *Stamens* as in the former species. *Style* half the length of the gibbous nectary. *Stigma* large; apex two-lobed.

I have not seen the pericarp, but from the structure, and contents of the germ, I imagine it will be a one-seeded berry.

HEYNEA. (R.)

Calyx five-toothed. *Petals* five. *Nectary* cylindric with the anthers attached round the inside of its mouth.

Germ two-celled ; cells two-seeded ; attachment interior. *Capsule* superior, one-celled, two-valved, one-seeded. *Seed* arilled. *Embryo* inverse, without perisperm.

1. H. *trijuga. R.*

Leaves unequally pinnate ; *leaflets* three pair. *Panicles* axillary, long-peduncled.

Kapyak*oo*shee.

A native of Nepal ; from thence, in 1802, Dr. Buchanan sent seeds of this tree, to the Botanic garden at Calcutta, under the vernacular name *yakooshee*, where in seven years, the young trees were about fifteen, and twenty feet high, with much the habit of the Walnut tree. Flowering time in the Botanic garden, March ; the seed ripens in October.

Trunk straight, in our young trees about as thick as a man's thigh. *Bark* dark ash-coloured, and pretty smooth. *Branches* few ; *young shoots* marked with scabroùs spots. *Leaves* unequally pinnate, alternate, from one to two feet long. *Leaflets* opposite, short-petioletted, two or three pair, ovate-oblong, acuminate, entire, smooth, from four to eight inches long, and from two to four broad. *Petioles* round, smooth, swelled at the insertion of the leaflets. *Petioles* channelled, less than an inch long. *Stipules* none. *Panicles* axillary, solitary, long peduncled, smooth, erect. *Flowers* numerous, small, white. *Bractes* minute, caducous. *Calyx* one-leafed, five-toothed, permanent. *Petals* five, cuneate-lanceolate, spreading. *Nectarium* subcylindric, shorter than the petals, half ten-cleft, division alternately a little shorter, bifid. *Filaments* scarcely any. *Anthers* ten, ovate, three-lobed, crowned with an obtuse point, attached to the inside of the divisions of the nectary. *Germ* superior, immersed in a large fleshy ring, two-celled, with two *ovula* in each, attached to the middle of the partition. *Style* short. *Stigma* large, nearly round, with a two-toothed apex which is ra-

ther within the mouth of the nectary. *Capsule* round, the size of a small cherry, fleshy, one-celled, two-valved, opening round the apex. *Seed* solitary, round, invested in a complete, thin, white, sebaceous aril, which with the seed, as in the germ, are attached to what was the partition, now pressed to one side by the abortion of three-fourths of its original contents. *Integument* single, when recent orange, but soon changing to a chesnut colour, smooth, and strong, with a long white umbilicus strongly marking the side of attachment. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, hemispheric, conform to the seed, firm, green. *Plumula* small, two-lobed. *Radicle* superior, small.

The back, leaves, and tender parts possess a considerable share of a peculiar bitter taste; and the cold infusious thereof, with the addition of a little sulphate of iron, becomes black; two principles very generally found amongst the plants of this natural order, which grow in India.

Specimens of another species were received from the Molucca Islands where the tree grows, but I have no drawing thereof. I however add a short definition below.

2. H. *quinquijuga. R.*

Arboreous. *Leaves* unequally pinnate; *leaflets* five pair. *Panicles*, the length of the leaves.

A tree, native of the Moluccas, with the perfect habit of a *Melia.*

EKEBERGIA. Schreb. gen. n. 619.

Calyx from four to five-toothed. *Corol* five-petalled. *Nectary* cylindric, ten-cleft, antheriferous. *Germ* superior, five-celled, cells one-seeded. *Embryo* inverse, and furnished with a perisperm.

1. E. *indica. R.*

Shrubby. *Leaves* pinnate; *leaflets* grossly serrate. *Nectaries* ten-cleft to near the base. *Panicles* axillary.

Teling. Pooroodona.

Common throughout the Circars. It delights chiefly in the lower, sloping barren lands, about the bottom of mountains, where it grows to be a small tree. It flowers all the year round.

Leaves alternate, unequally pinnate, from six to nine inches long. *Leaflets* from four to six pairs, opposite, oblong, grossly serrate, smooth; the most exterior always largest, about three inches long, and one and a half broad. *Panicles* axillary, small, long-peduncled. *Flowers* small, white, inodorous. *Nectary* ten-cleft, cylindric; *segments* bifid. *Filaments* exceedingly short, inserted into the divisions of the ten segments of the nectary. *Germ* superior, five-celled, with one *ovula* in each, attached to the upper end of the axis. *Berry*, the size of a pea, round, smooth, when ripe red and somewhat succulent, five-celled. *Seed* solitary, reniform. *Integuments* two; *exterior* hard, thin, and elastic; *inner* membranaceous, and brown. *Perisperm* conform to the seed, soft and juicy. *Embryo* a little curved, inverse. *Cotyledons* oblong. *Radicle* oblong, superior.

I have not found that this species is employed in any shape except for fuel.

SANDORICUM. Schreb. gen. n. 1751.

Calyx five-toothed. *Corol* five-petalled. *Nectary* cylindric, bearing the ten anthers in its mouth. *Germ* superior, five-celled, cells two-seeded, attachment subsuperior. *Berry* five-seeded. *Embryo* inverse, no perisperm.

1. S. *indicum. Willd.* 2. 556.

Sandoricum. *Rumph. Amb.* 1. *p.* 167. *t.* 64.

A most elegant tree, having a straight trunk, about ten or twelve feet in height, covered with smooth, greenish bark; the tree this measurement is taken from is in the Company's Botanic garden at Calcutta, about twenty-four years old, eighty inches in circumference, four feet above the ground, supporting a large, globular, dense head; it flowers in February, and the fruit ripens in the rainy season.

Leaves alternate, petioled, ternate, about a foot long. *Leaflets* ovate, entire, having the upper side smooth, except when young, and the lower one downy, the veins parallel, from five to seven inches long, and from three to four broad. *Petioles* round, when young downy. *Stipules* none. *Panicles* axillary, diffuse, shorter than the leaves. *Bractes* oblong. *Flowers* numerous, small, yellow. *Calyx* beneath, campanulate, five-parted; *divisions* rounded, downy. *Petals* five, linear-oblong, expanding. *Nectary* double; the *exterior* one cylindric, with a ten-toothed mouth; the *interior* one is one-fourth the length of the exterior one, enveloping the germ and base of the style, with its *mouth* about ten-toothed. *Filaments* none. *Anthers* ten, linear, affixed to the inside of the exterior nectary. *Germ* superior, five-celled, with two *ovula* in each, attached to the upper end of the axis. *Berry* nearly round, size of a small orange, slightly villous, when ripe yellow; *pulp* in large quantity, fleshy, acid, and edible, five-celled, but the partitions are often incomplete, when the seeds come to maturity. *Seeds* one in each cell, oblong, each enveloped in its own proper aril, as in the *guttiferæ*; *aril* replete with tough woolly fibres, which adhere firmly to the exterior, tough, parchment like *integument*; the *inner integument* brown, polished and spongy; attachment from the upper and inner edge to the upper end of the axis, as in the germ. *Perisperm* none. *Embryo* straight, inverse. *Cotyledons* two, conform to the seed. *Plumula* two-lobed. *Radicle* short, clavate, superior.

MELIA. Schreb. gen. n. 724.

Calyx five-toothed. *Corol* five-petalled. *Nectary* cylindric, bearing the anthers in its mouth. *Germ* superior, five-celled; cells from one to two seeded; attachment subsuperior. *Drupe* with from a one-to a five-celled nut. *Seed* solitary. *Embryo* inverse, with little or no perisperm.

1. M. *azadiracta. Willd.* 2. 559.

Leaves pinnate; *leaflets* falcate. *Drupe* one seeded.

Sans. Nimba.

Teling. Vepa.

Beng. Neem, or Nimb.

Tam Vepam.

Azedarach. *Burm. Zeyl.* 40. *t.* 15.

Aria-bepou. *Rheed. Mal.* 4. *t.* 52.

A middling sized, very common, beautiful, and very useful tree. Flowering time the hot season. It differs from all the other species known to me in having a one-celled, one-seeded nut, though the germ has uniformly five-cells, with one or two *ovula* in each.

2. M. *tomentosa. R.*

Leaves pinnate; *leaflets* ten paired, entire. Thryses axillary, solitary, long peduncled, simple.

Mal. Barang babee.

A native of Pulo Pinang, where it grows to be a large tree.

Leaves alternate, pinnate, six feet, or more in length. *Leaflets* opposite, ten or more pairs, subsessile, lanceolate, entire, fine-pointed, of a firm, leathery texture, reticulated, and very downy underneath; exterior pairs largest, often a foot in length. *Petioles* round, very downy. *Stipules* none. *Racemes* axillary, solitary, long-peduncled, thyrsiform, compound. *Flowers* pretty large, very numerous, crowded. *Bractes* subulate, downy.

Calyx cup-shaped, almost entire, downy. *Petals* five, wedge-shaped, expanding. *Nectary* cylindric, nearly the length of the petals, the ten divisions of its mouth linear, and ragged on the inside; exceedingly hairy. *Stamens* as in the genus. *Germ* ovate, hairy. *Style* as long as the nectary, hairy. *Stigma* globular.

The ripe fruit has not been found, but the germ has five cells, with one seed in each.

3. M. *sempervirens. Willd.* 2 559.

Leaves bipinnate; *leaflets* ovate cordate, gashed, with taper, entire apices, smooth on both sides but not shining.

Melia foliis duplicato-pinnatis. *Flor. Zeyl.* 162.

Sans. Muha-nimba.

Hind. Bakarja.

Arab. Ban.

Teling. Turka-vepa.

A native of Persia, now common throughout India. Plants reared in the Botanic garden at Calcutta from seed received from the West Indies, did not in any respect differ from our own Asiatic sort. It blossoms the greater part of the year in our gardens, and is perfectly distinct from *Azedarak* which is a robust, deciduous timber tree, and this a small, delicate, ever green, of short duration, compared with the other.

4. M. *azedarak. Willd.* 2. 558.

Leaves bipinnate; *leaflets* obliquely ovate-lanceolate, serrate, taper-pointed, of a deep shining green.

Shum-shu of the Chinese at Canton.

Melia *azadiracta. Gært. sem.* 2 *p.* 474 *t.* 180. *f.* 9.

A native of China, &c. In the Botanic garden at Calcutta it flowers during the hot season, thrives luxuriantly and quickly becomes a large useful timber tree, of very

great beauty. Its flowers are like those of the *Lilac*, and are sweetly fragrant.

5. M. *superba. R.*

Leaves bi-tripinnate; *leaflets* ovate-cordate, serrate, acuminate, lucid. *Drupe* ovate; *nut* perforated at both ends.

A native of Soonda, where Dr. Berry found it, a forest tree of immense size. In the Botanic garden at Calcutta where it has been raised from the seed, sent by Dr. B. it has, in six years from the time the seed was sown, attained the height of forty or fifty feet, with a most stately trunk, of about four feet in circumference, at four feet above ground. Flowering time February and March, and the seed ripens in December and January.

Trunk nearly straight. *Bark* dark brown, dotted with small white specks. *Branches* generally trichotomous, their bark like that of the trunk. *Young shoots* mealy. *Leaves* alternate, in luxuriant young trees tripinnate, when older generally bipinnate; from two to four feet long, (in M. *robusta* they are only from twelve to eighteen inches long). *Pinnæ* from three to six pair, opposite. *Pinnulæ* ternate. *Leaflets* from three to seven pair to each pinna, generally opposite, petiolated, cordate, and ovate-cordate, crenate, smooth, acuminate; from three to five inches long. *Petioles* round, while young mealy. *Panicles* axillary, and lateral, round the base of the present annual shoots, large, ascending, very ramous, and of an ovate form, while young mealy. *Flowers* numerous, small, of a dull white, and offensive smell. *Bractes* small, lanceolate, nearly caducous. *Calyx* five-leaved; *leaflets* ovate-lanceolate, incurved, mealy. *Petals* linear, concave, recurved. *Nectary* subcylindric, rather gibbous at the base, ten-ribbed, hairy on the inside; the ten teeth of its mouth divided into three, four, or five short, subulate segments. *Germ* five-celled, with two seeds in each, attached from

their upper and inner angle, to the axis. *Style* cylindric. *Stigma* large, with a five-toothed apex. *Drupe* ovate, the size of a pigeon's egg, smooth, fleshy, when ripe yellow. *Nut* oblong, perforated at both ends; *apex* five-toothed round the perforation, five-celled. *Seeds* solitary, lanceolar, attached from the apex. *Perisperm* in small quantity. *Embryo* straight, inverse, pale green. *Cotyledons* lanceolate. *Radicle* oval, superior.

6. M. *robusta. R.*

Leaves bipinnate; *leaflets* obliquely ovate, polished, entire, or with the anterior margins crenulate, acuminate. *Panicles* axillary. *Drupes* ovate. *Nut* with a quinquedentate apex.

A large tree, a native of Malabar, and introduced into the Botanic garden at Calcutta by Dr. Berry, where in seven years the trunk of the largest tree was forty-four inches in circumference, four feet above ground, and the total height forty-six feet. Flowering time March and April. The seed ripens in December.

Trunk very straight. *Bark* clean, smooth, dark brown. *Branches* large, not very numerous, but spreading considerably, their bark like that of the trunk, with some light grey, scabrous specks. *Young shoots* downy, with minute stellate pubescence. *Leaves* alternate, unequally bipinnate, from twelve to eighteen inches long. *Pinnæ* about three pair. *Leaflets* three, five, seven, or nine on each pinna, the pairs obliquely-ovate, and oblong; the terminal one biform, all are smooth, or rather polished, entire, or crenulate, acuminate, from two to three inches long. *Panicles* axillary, scarcely half the length of the leaves. *Flowers* numerous, small, white, inodorous. *Bractes* below the ramifications of the panicle, solitary, filiform, and often very long. *Calyx* five-leaved; *leaflets* ovate-oblong. *Petals* linear-lanceolar, recurvate. *Nectary* gibbous at the base; segments of its mouth minute and filiform. *Filaments*

none. *Anthers* sessile, round the inside of the mouth of the nectary. *Germ* ovate, five-celled, with two seeds in each, attached from their apex to the aril. *Style* the length of the nectary. *Stigma* large, with a five-pointed apex. *Drupe* ovate, the size of a large olive, smooth, of a yellowish green within, when ripe, one-celled. *Nut* oblong, a perforation at each end, which passes through the centre; *apex* deeply five-toothed, thick and hard, five-celled, five-valved, for by age and exposure they divide spontaneously. *Seed* solitary, lanceolar. *Integuments* two; the *exterior* one highly polished, black; the *inner* one membranaceous. *Perisperm* none. *Embryo* inverse. *Cotyledons* lanceolar. *Plumula* two-lobed. *Radicle* short, superior.

SWIETENIA. Schreb. gen. n. 723.

Calyx five-toothed. *Corol* five-petalled. *Nectary* subcylindric, bearing the anthers in its mouth. *Germ* superior, from three to five-celled; cells many-seeded; attachment interior. *Capsule* from three to five-celled, from three to five-valved. *Seeds* imbricated, and winged. *Embryo* inverse, no perisperm.

1. S. *febrifuga. Willd.* 2. 557. *R Corom. pl.* 18. *t.* 17.

Leaflets from three to four pair, opposite, oval, and oblong, obtuse. *Panicle* terminal, diffuse. *Capsules* five-celled, opening from the apex.

Teling. Soymida.

Beng. Rohina.

Tam. Wond-marum.

A native of the mountains of India. It flowers during the hot season. The bark is a powerful febrifuge, and an excellent substitute for Peruvian bark, which was one of Sir William Jones's desiderata; see *Asiat. Res. vol.* xi. 180.

2. S. *Chickrassa. R.*

Leaflets from six to eight-pair, sub-alternate, obliquely oblong, pointed. *Panicles* terminal, diffuse. *Capsules* three-celled.

Beng. Chikrassee.

A native of the mountainous parts near Chittagong, &c. to the eastward of Bengal. Flowering time the hot season, viz. April, and May. It is a timber tree of great size, with a thick, straight trunk, and dark rust-coloured bark, which is pretty deeply cracked, but inwardly very firm and of a pretty deep reddish brown colour, which is powerfully astringent, but without bitterness.

Leaves alternate, abruptly-pinnate, in luxuriant plants often bipinnate, from six to eighteen inches long. *Leaflets* subopposite, from two to ten pair, subsessile, obliquely-ovate ; with a pretty long tapering point, entire, smooth on both sides, increasing in size towards the apex of the leaf. *Petioles* round, with here and there a small scabrous speck. *Stipules* none. *Panicles* terminal, erect, pretty large. *Flowers* numerous, pretty large. *Bractes* small. *Calyx* inferior, small, five-parted, the divisions expanding, linear, wedge-formed, slightly emarginate. *Nectary* nine-leaved, subcylindric, rather shorter than the petals, striated ; mouth most slightly ten-toothed. *Filaments* minute, inserted into the top of the toothlets of the nectary. *Anthers* cordate. *Germ* oblong, striated, a little hairy. *Style* just long enough to raise the large peltate. *Stigma* even with the mouth of the nectary. *Capsule* oval, somewhat pointed, scabrous, the size of a small pullet's egg, three-celled, three-valved, with double integuments, and a three-winged receptacle. *Seeds* numerous, winged and imbricated in a double series across the cells.

The wood of this tree is greatly admired for its beauty, being of a light colour, and most elegantly veined ; at the same time very close in the grain. It is employed to make furniture of various kinds.

3. S. *chloroxylon. Willd.* 2. 557. *R. Corom. pl. p.* 49. *t.* 64.

Leaflets alternate, from ten to twenty-paired, semicordate, oblong. *Nectary* a fleshy ring, with the stamina inserted round its base. *Panicles* terminal. *Capsules* three-celled.

Teling. Billoo.

Cing. Boorootch gata.

Tam. Moodudad-marum.

This is our beautiful East Indian, satin wood tree, which grows in mountainous districts chiefly, and blossoms during the hot season.

GARUGA. (R.)

Calyx campanulate, five-toothed. *Corol* five-petalled inserted into the mouth of the calyx, alternate with five stamina, and just above the other five. *Germ* superior, five-celled; cells two-seeded; attachment subsuperior. *Stigma* five-lobed. *Drupe* with from one to five one-seeded nuts. *Embryo* inverse, no perisperm.

G. *pinnata. R. Ind. pl.* 3. *N.* 208.

Teling. Garuga, or Garugoo.

Katou-Kalesjam. *Rheed. Mal.* 4. *t.* 33.

Beng. Joom.

A tree of great size, a native of various parts of India. It flowers during the hot season. The fruit is eaten by the natives, both raw and pickled.

TRIBULUS. Schreb. gen. n. 732.

Calyx five-leaved, or five-parted. *Corol* five-petalled. *Style* none. *Germ* five-celled; cells about three or four-seeded; attachment central. *Capsules* or *nuts* superior, five or more united, thorny, many-celled, cells one-seeded. *Embryo* centripetal, without perisperm.

T. *lanuginosus. Willd.* 2. 566.

Prostrate amongst grass, &c. *Leaves* about five-pair, oval, hairy. *Nuts* two-horned.

T. terrestris zeylanicus. *Burm. zeyl.* 1. 106. *f.* 1.

Sans. Gokshooruka.

Beng. Gokhoor or Gokhooree.

Common on pasture land in many parts of India, producing flowers and ripe seed great part of the year.

JUSSIEUA. Schreb. gen. n. 741.

Calyx from four to five-parted. *Corol* from four to five-petalled. *Capsule* inferior, from four to five-celled, opening at the angles. *Seeds* numerous.

1. J. *repens. Willd.* 2. 574.

Annual; floating by vescicles round the insertion of the alternate, obovate-cuneate leaves. *Flowers* axillary, five-petalled, decandrous.

Nir-carambu. *Rheed. Mal.* 2. *t.* 51.

Sans. Bhooluvungga, also Langulee.

Teling. Neer batsalla.

Hind. Kanchana.

Beng. Kesara-dam.

It is found in most parts of India, floating on lakes, and pools of fresh water; in flower during the rainy season.

2. J. *exaltata. R.*

Perennial, erect. *Leaves* alternate, sessile, narrow, lanceolate, downy. *Flowers* solitary, four-petalled, octandrous. *Capsule* nearly as long as the leaves.

Catta-carambu. *Rheed. Mal.* 2. 1. 50.

Beng. Bun-lung, or Lal-bun-lung.

Teling. Neeroo-agheendrapakao.

This species is perennial, it delights in moist places overgrown with small jungle. Flowering time the wet season.

Stem erect, when old woody. *Young parts* slightly four-sided, and downy. *Leaves* alternate, sessile, linear-lanceolate, entire, downy, from two to four inches long. *Stipules* minute, semilanceolate. *Peduncles* axillary, solitary, very short, one-flowered. *Calyx* four-cleft. *Petals* four, orbicular, clawed. *Stamens* eight, erect. *Capsule* four-celled.

MELASTOMA. Schreb. gen. n. 742.

Calyx campanulate, five-toothed. *Corol* five-petalled, inserted into the mouth of the calyx. *Germ* five-celled; cells many seeded; attachment to a cuneiform receptacle projecting from the axis. *Capsules* five-celled, involved in the calyx. *Seeds* numerous.

Note. All the species examined by me, have the *seeds* regularly attached to a cuneiform semilunar, *receptacle* in each cell, vertically united to the axis, as in *Osbeckia hirta Gært. sem.* 2. *t.* 126. I make this remark because Gærtner describes them to be nidulent; his seed vessels may have been old, and the receptacles decayed.

1. M. *ferruginea. R.*

Shrubby, all the tender parts, except the upper surface of the short-petioled, ovate-cordate, acuminate, entire leaves, covered with ferruginous, stellate pubescence. *Panicles* terminal. *Flowers* octandrous. *Calyx* with ample, obtusely four-lobed borders.

A native of Pulo Pinang.

2. M. *crinita. R.*

Shrubby, all the tender parts very hairy. *Leaves* petioled, lanceolate, from three to five nerved, entire. *Pa-*

nicles terminal ; *flowers* octandrous ; border of the calyx eight-parted ; segments ensiform, four of them minute, all ciliate.

A native of the most moist, and shaded parts of the rocky coast of Chittagong where it blossoms in April and May. It is remarkable for its great quantity of long, distinct, appressed, pale coloured hair, and large beautiful red flowers.

3. M. *pulchella. R.*

Shrubby. *Leaves* short-petioled, lanceolate, entire ; margins and nerves with a few appressed bristles. *Panicles* terminal ; *bractes* cordate, bristle-ciliate. *Flowers* octandrous, in the bud, bristle-ciliate, and ramentaceous.

A native of Chittagong.

4. M. *geniculata. R.*

Shrubby. *Leaves* subsessile, lanceolar, entire, scabrous, bristly, with three strigose nerves. *Flowers* terminal, triple, octandrous, alternate, filament jointed.

A large ramous shrub, a native of many parts of India.

Bark of the old branches pretty smooth, of the young very strigose ; all round. *Leaves* opposite, short-petioled, lanceolar, entire, three-nerved, scabrous on both sides, not only from numerous, short, bristly hairs pointing forward, but also from a natural harshness ; the under side of the nerves, and petioles strigose. *Flowers* terminal, generally three-fold, short-peduncled. *Peduncles* very strigose. *Bractes* solitary, or in pairs to each flowers, ovate-concave, and falling off with, or soon after the petals, leaving the tube of the calyx for an envelope to the capsule. *Calyx* four-parted, very strigose ; *divisions* cordate, acute. *Corol* four-petalled. *Filaments* alter-

nately enlarged with a second curved joint. *Anthers* recurved, linear. *Capsule* four-celled.

5. M. *cernua. I. R.*

Scandent. *Leaves* ovate-lanceolate, five-nerved, smooth. *Panicles* terminal, long, thin, drooping, with the ramifications four-winged. *Flowers* octandrous.

A native of Chittagong. It flowers in October and November; and the seed ripens in February, and March.

The leaves in this elegant large rambling species that occupy all but the base of the panicle are rather long-petioled, remarkably large, often a foot long, and from three to four inches broad; with the nerves particularly large and distinct to the very apex; those close to the panicles are sessile, and very exactly cordate; the panicles are also uncommonly long, as far as two feet, or more, and droop elegantly when loaded with its profusion of middling sized, bright red flowers.

6. M. *vagans. R.*

Scandent. *Leaves* ovate-cordate, bristle-serrulate, acuminate, three or five-nerved; petioles and nerves hairy. *Panicles* terminal, large and decussated, *flowers* octandrous.

Beng. Juy-phutkee.

An extensive, beautiful scandent shrubby species, a native of the hilly countries immediately east of Bengal where its numerous, small, bright red flowers appear in October, and the seed ripens during the ensuing hot season. The young shoots, petioles, and nerves of the leaves are the only hairy parts, and but in a small degree, all the rest are smooth; the leaves are large, about six inches long, and three broad.

7. M. *impuber. R.*

Smooth in every part. *Leaves* long-petioled, ovate-

cordate, entire, three-nerved, (beside the marginal rib.) *Panicles* terminal, divaricate. *Flowers* octandrous. *Calyx* subcylindric, with the mouth obscurely four-toothed. *Capsule* hid in the bottom of the calyx.

A native of the Moluccas. The flowers in this pretty, smooth species, are uncommonly small, with the oval petals shorter than the filaments, which are all simple, and shorter than their anthers.

8. M. *cordifolia. R.*

Scandent, every part smooth. *Leaves* short-petioled, cordate, entire. *Panicles* terminal. *Flowers* octandrous, *Petals* ovate. *Calyx* with an ample, obtusely four-lobed border.

A native of Chittagong and Pulo Pinang.

9. M. *malabathrica. Willd.* 2. 592.

Shrubby, tender parts strigose. *Leaves* entire, broad-lanceolar, from three to five-nerved, scabrous, with appressed, short, sharp, flat bristles. *Flowers* terminal, and surrounded with ovate-cordate bractes, divisions of the calyx cordate, acute.

Kadali. *Rheed. Mal.* 4. *t.* 42.

A large shrub, or small tree, a native of our Circar mountains, Chittagong, &c. It flowers in March.

Leaves opposite, short-petioled, broad lanceolar, from three to five-nerved, entire, scabrous, particularly above; about four and a half inches long, and one and a half or two broad. *Flowers* terminal, short-peduncled, large, red. *Calyx* and *Corol* as in the genus. *Filaments* ten, yellow, five are short, tapering, ending in a crescent-shaped gland, in which the anthers sit; five others are alternate with those five, double their length, have a bend, with a crescent-shaped process on their middle. *Anthers* linear, erect. *Germ* hairy, five-celled, with numerous *ovula* in each cell, attached to their semi-ovate cuneate

receptacles, which adhere vertically to the axis, as represented in *Osbeckia hirta. Gert. sem.* 2. *t.* 126.

10. M. *decemfida. R.*

Shrubby. *Leaves* petioled, lanceolar, three or five-nerved, entire, smooth, except a few bristles on the nerves. *Flowers* terminal, decandrous. *Calyx* ten-cleft, and very shaggy, with long stiff hairs.

A native of hills on Pulo Pinang, in flower and seed in July and August.

11. M. *curva. R.*

Shrubby; all the tender parts strigose. *Leaves* petioled, ovate-cordate, from five to seven-nerved, finely serrulate. *Panicles* terminal, corymbiform, supradecompound. *Flowers* decandrous. *Petals* cordate, ciliate.

A native of Chittagong.

12. M. *furcata. R.*

Shrubby, tender parts a little bristly. *Leaves* short-petioled, oblong, three-nerved, entire. *Flowers* terminal, long-pedicelled, decandrous. *Calyx* covered with bifid strigæ, the segments of its border subulate, and deciduous.

A native of the Moluccas, a slender, delicate species.

13. M. *dodecandra. R.*

All the tender parts more covered with bristles than the lanceolate, entire, three-nerved leaves are. *Flowers* in terminal fascicles, dodecandrous, twelve segments of the very bristly calyx deciduous. *Filaments* alternately doubled.

A native of the Moluccas, and by far the largest-flowered species I have yet met with; when full blown they expand from four to five inches. The capsule has only five cells.

GASTONIA. Juss. gen. n. 242.

Calyx obscurely from eight to ten-toothed. ***Petals*** from eight to ten. ***Germ*** inferior, from eight to ten-celled; cells one-seeded; attachment superior. ***Stigma*** from eight to ten-rayed. ***Capsule*** evalvular, from eight to ten-celled. ***Seed*** solitary. ***Embryo*** inverse, and furnished with a perisperm.

1. G. *palmata. R.*

Sub-arboreous, armed. ***Leaves*** palmate, serrate; ***petioles*** armed.

An erect, stout shrub, or small tree; every part well armed with numerous, short, straight prickles. A native of the moist vallies of Chittagong, where it blossoms in January and February, and the seeds ripen in May and June.

Stem, in luxuriant plants in the Botanic garden at Calcutta now three years old, straight, nearly simple, about as thick as our largest walking canes, from six to seven feet high, completely armed with numerous, small, straight and incurved prickles, toward the leaves, round, the top intermixed with appressed, feruginous, stiff bristles. ***Branches*** only two or three from the lower parts of the stem, where it is thicker, and more ligneous, in every respect like the stem. Full grown trees in their native vallies, are from ten to twelve feet high, with stems twelve inches in circumference, bearing only a few branches at the top. The *leaves* round the top of the stem and branches are nearly round, alternate, approximate, petioled, palmate; from five to nine-lobed, from five to nine-nerved, of a hard texture, the upper surface pretty smooth, the under one rather rough; *lobes* lanceolate, acuminate, acutely serrate; sinuses round; the length and breadth from twelve to thirty-six inches.

Petioles often as long as the leaves; base somewhat sheathing with one bidentate, acute, stipulary process on the inside; from thence to the thickened incurved apex columnar, and armed with small prickles; which are more numerous about the apex, and ramentaceous. *Panicles* axillary and terminal, composed of a few, long-peduncled, simple *umbellets;* the whole much shorter than the leaves. *Involucres* a few, ensiform, feruginous scales. *Bractes* solitary at the division of the panicles, sheathing, tapering, acute, feruginous. *Flowers* numerous, pretty large, white. *Calyx* superior, small, with a subtruncate margin, being only obscurely marked with from eight to ten denticles, clothed on the outside with mealy feruginous down. *Petals* from eight to ten, generally ten, lanceolate, spreading. *Filaments* from eight to ten, generally ten, alternate with the petals, and about the same length, or rather longer. *Anthers* of two very distinct linear-oblong lobes, which separate more at the base. *Germ* turbinate, from eight to ten-celled, with one *ovula* in each cell, attached to the top of the axis. *Style* short, conic, from eight to ten grooved, permanent. *Stigma* concave, with its margin marked with as many elevations, as there are cells in the germ. *Berry* or *capsule,* nearly round, crowned with the remaining calyx, the size of a nutmeg, somewhat mealy, thin, and of a soft ligneous texture, from eight to ten-celled, evalvular (never, by any mode yet observed, opening spontaneously.) *Seed* solitary, conform to the cell, consequently very thin, particularly the inner edge. *Perisperm* conform to the seed. *Embryo* inverse. *Cotyledons* two, lanceolate. *Radicle* oblong, superior.

2. G. *sasuroides. R.*

Unarmed. *Leaves* simple.

A native of the Moluccas, and nearly allied to Rumphius's *Sasuru* or *Pseudo-sandalum, vol.* 2. *t.* 12. Here the

umbelets are decompound ; the first rays numerous ; the second dichotomous ; and the third many-fold, and short.

RHODODENDRON.

Calyx five-parted. *Corol* infunbuliform. *Stamina* declined. *Capsule* five-celled.

1. R. *puniceum. R.*

Arboreous. *Leaves* lanceolar, coriaceous, hoary underneath. *Racemes* terminal. *Bractes* ensiform, sericeous. *Corol* campanulate ; *segments* retuse. *Capsules* ten-celled.

Boorans. *Hardw. in Trans. Asiat. Soc.* 6. 359.

A large tree, a native of the mountains north of Rohilkhund, &c. It flowers in April and May.

Trunk from twenty to thirty feet high, in large trees about two feet in diameter. *Bark* suberous, light, scaling off in irregular pieces, of an inch in thickness, and composed of numerous, reddish cinnamon-coloured lamina of about half a line in thickness ; the exterior one of a burnt-brown. *Branches* numerous, very crooked. *Leaves* alternate, about the ends of the branchlets, short-petioled, lanceolate, entire, coriaceous ; smooth above, hoary underneath ; about six inches long. *Stipules* none. *Germs* terminal, imbricated. *Racemes* terminal, sessile, subglobular, much shorter than the leaves, crowded with large, beautiful, deep crimson flowers. *Bractes ; exterior*, before the flowers expand, imbricated, strobiliform ; large, of a shape from oval to cuneiform, solitary, one-flowered cloth-ed on the outside with much, long, beautiful, sericeous, pale yellow pubescence ; the *interior* two, filiform, inserted on opposite sides of the pedicells near the base. *Calyx* small, unequally five-toothed. *Corol* campanulate, somewhat oblique. *Border* of five, nearly equal, broad, retuse segments, the undermost one more highly coloured, if pos-

sible, and rather the largest. *Filaments* ten, shorter than the corol, unequal, declining. *Anthers* open with two pores at the top. *Germ* superior, ovate-oblong, sericeous, ten-grooved, ten-celled. *Style* longer than the stamina, curved. *Stigma* large, infundibuliform, with a ten-notched margin. *Capsule* linear-oblong, pretty smooth, and void of pubescence, ten-celled, ten-valved. *Receptacles* very thin, vertically attached to the axis, and projecting far into the valves. *Seeds* numerous, minute, somewhat winged.

Colonel Hardwicke informs us that the wood is in estimation among the natives, for making gun stocks, or the stocks of their match-lock pieces.

To introduce this beautiful tree in the Botanic garden at Calcutta, many attempts have in vain been made; the seeds are exceedingly minute, and have always proved abortive.

Dr. Rutherford, of Mooradabad, who has just sent me seed and specimens, writes that he had at last penetrated to the second range of Hills in the neighbourhood of Chipea, and there had an opportunity of seeing this most lovely of all trees in its glory, and says, "On the "leaves of the accompanying specimens, you will observe "a substance encrusted like sugar, or honey. I was "much struck with this appearance, for the trees on "which it was first observed, glistened in the sun as if "they had been just moistened with rain, and my sur-"prise was not a little encreased when I discovered "that this substance was sweet as the most delicious ho-"ney. It existed in various degrees of density, from the "thinest varnish, to a crust of several lines in thickness; "while from some leaves it hung in drops, that were "sometimes soft and pellucid, at others opaque and so-"lid like candied sugar; what is remarkable, the south-"ern face of the trees only presented this appearance, "nor was it observed in any but those at the very sum-

"mit of the mountain. To us, parched with thirst, and "exhausted with fatigue it proved extremely grateful; "though afterwards, a somewhat different feeling was "excited. On discovering that the underside of the "leaves was covered with thousands of insects, of a faint "green colour, and so minute as to be barely distin- "guishable by the naked eye, at first I supposed that the "honied substance must have been a formation of these "insects; but I was afterwards able to correct this no- "tion, by observing that some of the stems and branch- "es, which were hoary with lichens, were likewise cover- "ed with it, though no traces of the insects could be ob- "served. The nectaries of the flowers were plentifully "supplied with honey; but in them it was fluid, and tran- "sparent as water."

FERONIA.

Correa in Trans. of Linn. Soc. 5. 224.

Calyx from four to five-toothed. *Corol* from four to five-petalled. *Germ* superior, one-celled; *ovula* numerous, attached to five parietal receptacles. *Berry* spherical, covered with a hard cortex, one-celled. *Seeds* numerous, immersed in pulp. *Embryo vaga* without perisperm.

1. T. *elephantum*. *Willd*. 4. 973. *R. Corom. pl. 2. N.* 141.

Crateva vallanga. Kön. Mss. by some written balanga, or balangas.

Capittha. *Asiat. Res.* 4. *p.* 280.

Anisifolius. *Rumph. Amb.* 2. *t.* 43.

Beng. Kath-bel.

Teling. Yellanga.

Tam. Vallanga, or Vola-marum.

Eng. Elephant, or wood apple.

A large tree, yielding very hard, durable timber, found in most parts of India. Flowering time the beginning of the hot season. The germ is one-celled, containing numerous *ovula* attached to five parietal receptacles. The fruit edible, and much esteemed by many.

ARBUTUS. Schreb. gen. n. 750.

Calyx five-parted. *Corol* ovate, diaphanous at the base. *Berry* superior, five-celled.

A. *herpetica. C.*

Arboreous. *Leaves* ovate, entire, pointed. *Racemes* terminal, drooping. *Berries* many-seeded.

Found by Colonel Hardwicke, amongst the mountains on his tour to Sirinagur. *See Asiat. Res. vol.* 6. *p.* 360.

CERATOSTEMA. Juss.

Calyx five-parted. *Corol* tubular, subcylindric; mouth five-cleft. *Anthers* long-horned. *Germ* inferior, five-celled; cells many-seeded; attachment central. *Berry* five-celled, many-seeded. *Embryo* centripetal, and furnished with a perisperm.

1. C. *vaccinacea. R.*

Shrubby. *Leaves* subverticelled, narrow-lanceolar, serrate. *Racemes* axillary, the length of the leaves.

An elegant, very ramous shrub, a native of the Garrow hills, where it is called Kesaproom, the flowers have an acid taste, and are eaten by the natives in their curries. Flowering time April; the seed ripens in July.

Branches and branchlets numerous, and very erect; the *young* twigs rough with the withered permanent stipule, like ensiform scales; general height of the shrub about six feet. *Leaves* tending to be verticelled, subses-

sile, narrow-lanceolar, serrate, acute, smooth, three inches long, and half an inch broad. *Racemes* axillary, the length of the leaves. *Flowers* numerous, drooping from the exterior side of the raceme, small, white, tinged with green. *Bractes* two, small, on each pedicel near the base. *Calyx* superior, five-toothed, permanent. The base is joined to the enlarged apex of the pedicel by a contracted articulation. *Corol* tubular. *Tube* considerably gibbous. *Mouth* five-toothed, and contracted. *Filaments* ten, inserted on the base of the tube of the corol. *Anthers* linear, ending in a linear, brown scariose flat *arista*, as long as the anthers themselves, the whole shut up within the corol. *Germ* inferior, five-celled, with two vertical rows of *ovula* in each, attached to the axis. *Style* the length of the corol. *Stigma* five-lobed. *Berries* inferior, globular, succulent, the size of a small pea, smooth, of a greenish-yellow when ripe, five-celled. *Seeds* many in each cell, oblong, rugose. *Perisperm* soft, and white. *Embryo* straight, cylindric, green, nearly as long as the perisperm. *Cotyledons* oblong. *Radicle* cylindric, the length of the cotyledons, centripetal.

2. C. *variegata. R.*

Shrubby. *Leaves* lanceolar, entire. *Racemes* axillary, few-flowered, drooping.

Beng. Jalamoot.

A stout shrubby plant, a native of mountain forests near Chittagong, Silhet, and on the Garrow hills, where it blossoms during the cool season, when its numerous, most beautiful, large, variegated, rosy flowers are highly ornamental; the seed ripens in July.

Branches thick, ligneous, and of a stunted appearance, covered with rough, ash-coloured bark. *Young shoots* smooth, and coloured. *Leaves* alternately crowded about the ends of the branchlets, subsessile, lanceolar, entire, firm and smooth; from five to six inches long, and one

and a half or two broad. *Stipules* none. *Peduncles* axillary, but chiefly from the old axils on the two to three year old branches, solitary, or in pairs, very short, from five to twenty flowered, smooth. *Pedicels* much longer than the peduncles, smooth, clavate, highly coloured, pendulous, having the apex enlarged into a saucer-shaped receptacle for the germ. *Flowers* large, (two inches long,) pendulous, of a variegated pink and red colour, with the mouth greenish. *Bractes* some triangular scales at the base and divisions of the peduncle. *Calyx* superior, five-parted. *Segments* smooth, conical, and acute. *Corol* one-petalled. *Tube* considerably gibbous toward the middle; the shades of colour appear imbricated, and acuminate; *mouth* five-cleft; *segments* taper, rather obtuse, and greenish. *Filaments* ten, short, scariose, sometimes slightly united at the base, inserted partly on the crown of the germ, and the base of the tube of the corol on the inside. *Anthers* linear, of a bright rust colour, two-celled, crowned with a very long, scariose, bright, gold coloured horn, which reaches to the mouth of the corol, and united their whole length into a tube round the style. *Germ* inferior, urn-shaped, five-celled, with many *ovula* in each, attached to the axis. *Style* the length of the corol. *Stigma* five-lobed. *Berries* inferior, turbinate, crowned with the permanent calyx, the size of a small cherry, succulent; when ripe the colour is a mixture of red and yellow, five-celled. *Seeds* many, linear-oblong, inserted as in the germ. *Integument* single. *Perisperm* conform to the seed, soft, and clammy. *Embryo* nearly straight, cylindric. *Cotyledons* two. *Radicle* columnar, apex at the umblicus (centripetal.)

STYRAX. Schreb. gen. n. 753.

Calyx five-toothed. *Corol* one-petalled, five-cleft. *Germ* superior, one-celled, many-seeded; attachment in-

ferior. *Drupe* dry ; *nut* one or two-seeded. *Embryo* erect, and furnished with a perisperm.

1. S. *serrulata. R.*

Leaves oblong, acuminate, serrulate, smooth. *Racemes* terminal, simple.

Beng. Koom-jameva.

A small tree, a native of Chittagong, where it blossoms in March, and the seed ripens in October.

Branchlets alternate, the extreme tender parts only villous, with a little, minute, stellate pubescence. *Leaves* alternate, short-petioled, broad-ovate-lanceolate, serrulate, acuminate, while young somewhat villous underneath, about three inches long, and from one to one and a half broad. *Stipules* none. *Racemes* terminal, generally on very short lateral branchlets, solitary, simple, shorter than the leaves. *Peduncles* and *pedicels* villous. *Flowers* pretty large, alternate ; besides those which occupy the racemes there are two, or three, on pretty long, recurvate, proper peduncles, in each of the exterior axills. *Bractes* subulate, villous. *Calyx* campanulate ; *mouth* repand-dentate, the outside and margins villous. *Corol* one-petalled. *Tube* short, cylindric. *Border* six-cleft ; *divisions* lanceolate, villous on the outside. *Filaments* ten, inserted into the mouth of the tube of the corol, and there broad and woolly. *Anthers* linear, erect. *Germ* superior, ovate, villous, one-celled, containing a number (from ten to fifteen) of seeds attached to a receptacle, which rises but little above the bottom of the cell, and is also in some measure attached to the sides of the germ by three *partial* partitions, in short, semi-trilocular. *Style* the length of the stamina, smooth. *Stigma* obscurely three-lobed. *Drupe* or *capsule* superior, ovate, the size of a small nutmeg, clothed with short, soft, grey, thin, and rather bristly, pubescence one-celled, when ripe, slitting irregularly from the base, into

two, three, or four irregular portions. *Nuts* or *seeds* generally from one to four, consequently their shape varies much, attached as in the germ. *Integuments* two; the *exterior* one somewhat nuciform, pretty smooth, dark brown, the *interior* one membranaceous. *Perisperm* conform to the seed, of a firm texture, and dull whitish grey colour. *Embryo* erect, nearly as long as the perisperm. *Cotyledons* ovate-lanceolate. *Radicle* oblong, inferior.

2. S. *benjoin. Willd.* 2. 623. *Dryand. in Phil. Trans.* 77. 308. *t.* 12.

Leaves alternate, oblong, tapering to an obtuse point; *racemes* (panicle,) axillary, compound, not villous, one-seeded.

Benjamin, or Benzoin, *Marsden's Sumatra, p.* 123.

Luban the Bengalee, and Arabic name of the resin, though in fact this name ought to be applied to the resin of my *Boswellia thurifera,* which is the real *olibanum* or Frankincense, of the ancients.

INOCARPUS.

Calyx bidentate. *Corol* infundibuliform; five-cleft. *Stamina* in a double series from the tube. *Germ* superior; one-celled; one-seeded; attachment superior. *Drupe* one-seeded. *Embryo* inverse; no perisperm.

I. *edulis. Linn. suppl.* 239.

Gajanus. *Rumph. Amb.* 1. *p.* 170. *t.* 65.

A native of the Molucca Islands, and from thence introduced into the Botanic garden at Calcutta in 1798, where in ten years the largest of them was twenty-five or thirty feet high; they blossom during the hot season, and ripen their fruit in August and September.

Trunk straight. *Bark* smooth; of a greenish-ash colour. *Branches* spreading with numerous, bifarious, flexuose,

beautifully drooping branchlets. *Leaves* alternate, bifarious, short-petioled, permanent, oblong, emarginate, entire, both sides polished, and of a deep shining green colour; from six to twelve inches long, and about three or four broad. *Stipules* minute, caducous. *Spikes* axillary, sessile, solitary, or in pairs, much shorter than the leaves. In the Bengal plant smooth. *Flowers* numerous, small, very pale yellow, fragrant. *Calyx* bilabiate. *Corol* funnel-shaped. *Border* five-cleft; *segments* lanceolate. *Filaments* ten, in a double series, hid in the tube, and inserted into it. *Anthers* oval, those of the upper series even with the mouth of the tube of the corol. *Germ* superior, oval, one-celled, containing one-seed, attached to the top of the cell, immediately under the stigma, for there is no style. *Drupe* obliquely oval, the size of a goose's egg, a little compressed laterally, smooth, when ripe yellow, and of a tough fibrous texture, one-celled, two-valved, opening round the margin into two equal portions. *Nut* solitary, thick, two-valved, one-celled, and of a hard, tough fibrous consistence. *Seed* single, conform to the nut, and attached to it immediately under the stigma. *Integuments* two, the *exterior* one brown, firmer and thicker than the inner one, and beautifully marked with numerous, ramous, veins; the *inner* one membranaceous. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, conform to the seed, amygdaline. *Plumula*, in seeds beginning to vegetate, it consists of several imbricate scales. *Radicle* superior, cylindric, and lodged immediately within the umbilicus, under the stigma.

The rapid growth of this very beautiful, ever green tree, and the elegant shape of its spreading, dense crown of deep green foliage, renders it one of the most ornamental presents Bengal has got from the Molucca Islands. The kernel is certainly edible, but by no means palatable. As yet I can say nothing of the quality of the timber.

CASEARIA. Schreb. gen. n. 756.

Calyx five-leaved. *Corol* none. *Nectarial* filaments eight, or ten, distinct, and alternate, with the same number of stamina. *Germ* superior, one-celled, many-seeded, attachment parietal. *Capsule* berried, three-valved, one-celled. *Seeds* nidulent. *Embryo* in some centripetal, in others centrifugal, and between those directions, with a perisperm.

1. C. *vareca. R.*

Shrubby. *Leaves* linear-oblong, and lanceolate, very finely serrulate. *Flowers* axillary, crowded, octandrous. *Stamina* and *nectaries* on the bowl of the one-leaved calyx.

Vareca. *Gært. sem.* 1. *p.* 290. *t.* 60.

Tetahehera the vernacular name in Silhet, where it is indigenous; it flowers in May, and the seed ripens in September and October. *Young shoots* straight, rather angular, and somewhat hairy. *Leaves* alternate, bifarious, short-petioled, linear-oblong, and lanceolate, very finely, and acutely serrulate, a little hairy underneath; from three to six inches long, and from one to two broad. *Stipules* cordate, villous. *Peduncles* axillary, crowded, short, one flowered, the insertions embraced by many, small, scariose bractes. *Flowers* small, of a greenish grey colour. *Calyx* one-leaved, bowl-shaped, the *border* divided into five orbicular segments. *Nectarial* scales broad, short, and hairy, inserted alternately with the filaments, into the middle of the tube of the calyx. *Filaments* eight, short, slightly united to the nectarial scales. *Anthers* cordate. *Germ* superior, ovate, one-celled, containing several *ovula* attached to three equi-distant portions of the middle of the ovarium. *Style* short. *Stigma* capitate. *Capsule* superior, oval, the size of a french bean, smooth, one-celled,

three-valved, opening from the apex; the edge of the valves elevated. *Seeds* generally six, oblong, attached to the middle of the valves, enveloped in a little succulent aril, which dries into Gærtner's partial cells. *Integuments* two; the *exterior* one thin and white; the *interior* one firmer and brownish. *Perisperm* conform to the seed, oily. *Embryo* green, shorter than the perisperm, straight. *Cotyledons* cordate. *Radicle* cylindric, centrifugal.

2. C. *glomerata. R.*

Shrubby. *Leaves* bifarious, ovate-lanceolate, acutely serrulate, smooth. *Flowers* axillary; peduncled, crowded, octandrous. *Capsules* berried, two-valved, five-seeded.

Loorjoor the vernacular name in Silhet where it is found indigenous in the forests. Flowering in December, and the seed ripening in March.

Trunk short, dividing soon into many, nearly erect, smooth branches and branchlets. *Leaves* bifarious, short-petioled, from ovate to ovate-lanceolate, sharply serrulate, smooth on both sides, from two to four inches long, and one and a half broad. *Stipules* a brown downy scale, on each side of the insertion of the leaves. *Flowers* axillary, very numerous, small, of a greenish-yellow, each with a distinct peduncle. *Calyx* five-leaved. *Corol* none. *Nectary* of eight hairy filaments, alternate with, and shorter than those of the stamina. *Filaments* eight, incurved. *Anthers* cordate. *Germ* superior, ovate, one-celled, containing a few, from four to six, *ovula* attached oppositely to the inside of the cell near the middle. *Style* rather shorter than the stamina. *Stigma* large, subpeltate. *Capsule* berried, oblong, fleshy, somewhat ventricose, the size of a very small olive, one-celled, two-valved. *Seeds* generally from three to six, attached in the germ, nearly round, invested in a small portion of a red, soft aril. *Integuments* two, the *exterior* one thin, but firm like parch-

ment, and white ; the *interior* one membranaceous. *Perisperm* conform to the seed. *Embryo* straight. *Cotyledons* two, cordate, green. *Radicle* directly opposite to the umbilicus, centripetal.

3. C. *ovata. Willd.* 2. 629.

Arboreous. *Leaves* alternate, bifarious, ovate-oblong, serrulate. *Flowers* axillary, crowded, octandrous. *Calyx* five-leaved.

Stamens and *nectaries* distinct.

Anavinga. *Rheed. Mal.* 4. *t.* 49.

A pretty large tree, with an erect trunk, and numerous spreading and drooping branches, and branchlets. Found in the garden of Mr. Cowper on the banks of the Hoogly just below Calcutta, and was in full blossom in March, the old leaves were then falling, and the new ones just beginning to appear.

Leaves alternate, bifarious, drooping, ovate-oblong, and oblong serrulate, downy underneath. *Petioles* short, round, villous. *Stipules* small, villous, caducous. *Flowers* axillary, or from the old axills of the new leafless branchlets, much crowded into globular heads, small, of a pale green. *Peduncles* short, one-flowered, surrounded at their insertions with numerous, short, chaffy, villous involucres; these, when the flowers are removed, form a round chaffy receptacle, like that of many of the *syngenesious* flowers. *Calyx* five-leaved ; *leaflets* ovate, villous. *Corol* none. *Nectaries* eight subclavate, ciliate bodies, distinct from and alternate with the antheriferous filaments, and about half their length. *Filaments* eight, subulate, rather shorter than the calyx. *Anthers* two-lobed, on the anthers or the filaments being touched, or otherways irritated, they immediately expand and approach the base of the stigma, by means of an articulation at the base of the filament, which admits of this motion. *Germ* above

ovate. *Style* the length of the stamens, villous. *Stigma* large, somewhat three-lobed.

The mature fruit has not been seen.

4. C. *glabra. R.*

Arboreous. *Leaves* bifarious, alternate, drooping, ovate-lanceolate, slightly and remotely serrulate, smooth. *Flowers* axillary, decandrous. *Stamens* and *nectaries* inserted distinctly from each other.

Of this there is a single small tree in the Botanic garden at Calcutta, raised from seed from the Molucca Islands; it is in flower most part of the year, but never produces fruit, yet the flowers seem perfect hermaphrodites. The trees are now above ten years old, with a straight trunk, up through the diverging, or rather drooping branches to the very top of the little tree.

5. C. *tomentosa. R.*

Leaves alternate, oblong, serrate, downy. *Flowers* axillary, octandrous. *Stamina* and *nectaries* united at the base.

Teling. Gamgudoo.

A small handsome tree, a native of most of the Circars, but not abundant. It flowers about the beginning of the hot season.

Trunk erect. *Branches* spreading, horizontal; *branchlets* bifarious; *young shoots* downy. *Leaves* alternate, bifarious, short-petioled, ovate or oblong, serrate, downy underneath; from three to five inches long, and from one and a half to two and a half broad. *Stipules* small, downy. *Peduncles* axillary, many, short, one-flowered. *Flowers* small, downy, of a greenish yellow. *Calyx* five-cleft to the bottom; *segments* oval, hairy. *Nectary* a small flat ring surrounding the base of the germ; from it projects eight, clubbed, hairy divisions. *Filaments* eight.

alternate with the divisions of the *nectary* and inserted into it ; length of the calyx. *Anthers* oval. *Capsule* oblong, the size of a nutmeg, fleshy, sulcated, three-valved, one-celled. *Seeds* many, nestling in a scarlet nidus.

6. C. *esculenta. R.*

Leaves alternate, oblong, entire, smooth. *Flowers* axillary, octandrous. *Stamina* and *nectaries* united at the base.

Tojeron kanneli. *Rheed. Mal.* 5. *t.* 50. seems to be this plant.

Teling. Kunda-jungura.

This I have found only amongst the Circar mountains; it is a large shrub, differing from the last in size, and in having the leaves and every part perfectly smooth and shining ; in other respects they are the same.

The leaves are eaten in stews by the natives. The roots are purgative, and as such used by the hill people.

I have, without success, tried to extract a good colour from the red nidus of these plants.

AQUILARIA. Schreb. gen. n. 1753.

Calyx campanulate, five-cleft. *Corol* none. *Nectary* ten-leaved, alternate with the stamina. *Germ* superior, two-celled ; cells one-seeded ; attachment interior. *Capsule* two-celled, two-valved. *Seed* solitary. *Embryo* inverse, without perisperm.

A. *Agallocha. R.*

Leaves lanceolar. *Umbels* lateral, subsessile.

Sans. Ugooroo the name of the incense, or Aloe wood.

Hind. and *Beng.* Ugoor.

Arab. Ayaloogi, Ayuloogin, Yellanjooj, &c.

Pers. Ayaloor-chee, Oud, or Oud Hindee.

Eng. Agallochum, or Aloe wood.

An immense tree, a native of the mountainous tracts East and South East from Silhet, in about the latitude of twenty-four and twenty-five north. Flowering time the month of April ; the seed ripens in August.

There can be little, or no doubt, that this is the tree which furnishes the real Calambac, or Agallochum of the ancients, and there seems more reason to think that it was carried to China from our eastern frontier, than to suppose it was carried from Cochin China, or any other country in the vicinity of China, where it has always been in great demand. Small quantities are sometimes imported into Calcutta by sea, from the eastward ; but such is always deemed inferior to that of Silhet. Thriving plants of the Goro de Malacca received from that place, are now in the Botanic garden and so exactly like plants of the same age and size of our species, that they cannot be distinguished. But for proof positive of their being the same, we must wait till the Malacca plants blossom, and ripen their fruit, or till good specimens that can be depended on, in those states are obtained (and they are promised ;) till then we may be allowed to consider A. *ovata. Willd.* 2. 629. as another species of the same genus.

HARDWICKIA. R.

Calyx none. *Corol* from four to five-petalled. *Legume* capsular, one-seeded.

1. H. *binata. R.*

Leaves binate : *leaflets* semicordate.

Tam. Acha, alti-marum.

This elegant tree is found indigenous on the mountains of the coast of Coromandel, where it grows to a

large size, and yields timber of an excellent quality for a variety of uses.

Trunk tolerably straight. *Bark* deeply cracked. *Branches* numerous, spreading in every direction, with bifarious, alternate, slender, smooth, waving, drooping branchlets. *Leaves* alternate, bifarious, petioled, binate, with a minute bristle between them. *Leaflets* sessile, of a shape between semi-cordate and reniform, entire, very smooth on both sides, while young tinged with red, slightly marked with three or four nerves, from one to three inches long, and a little more than half of that in breadth. *Petioles* round, smooth, about one-fourth or one-third the length of the leaves. *Stipules* small, cordate, caducous. *Panicles* terminal, and from the exterior axils, small, delicately slender, and smooth on every part. *Flowers* scattered, slender, pedicelled, small. *Bractes* minute, caducous. *Calyx* none, except the corol be so called. *Petals* five, obovate, concave, spreading, somewhat hoary on the outside; inside yellowish, rather longer than the stamens. *Filaments* ten, alternately shorter, inserted round the base of the germ. *Anthers* incumbent, ovate, with an acute point between the lobes. *Germ* oblong. *Style* ascending. *Stigma* large, peltate. *Legume* lanceolate, from two to three inches long, two-valved, striated lengthways, opening at the apex. *Seed* solitary in the apex of the legume, and there inserted, cuneate, furrowed; the posterior edge thin and somewhat membranaceous, no aril.

Some beautiful thriving young trees are in the Botanic garden at Calcutta, reared from seeds sent from the mountains of Coromandel by Dr. Berry of Madras, will soon enable us to know whether this tree produces any thing like the medicinal balsam (*Copaiva*) obtained from a tree which seems to be very nearly allied to it.

2. H. *pinnata. R.*

Leaves alternately pinnate.

A tree a native of Travancore; the leaflets are about five in number, alternate, obliquely ovate-oblong, entire, firm and lucid.

NECTANDRA. Juss. gen.

Calyx inferior, tubular, from four to five cleft. *Corol* none. *Nectarial* scales from eight to ten from the mouth of the tube of the calyx, alternate with the stamina. *Germ* one-celled, one-seeded. *Berry* dry, one-celled. *Seed* solitary. *Embryo* inverse without perisperm.

N. *decandra. R.*

Leaves opposite, lanceolate, entire. Nectarial squamæ linear-clavate.

Herenda is the vernacular name in Silhet, where it has been found on only one hill, in the centre of an extensive jungle growing on the ruins of an old Hindoo place of religious worship, where the largest were elegantly bushy shrubs; flowering time October, the seed ripens in January, February and March.

Bark of the woody parts with small lighter coloured specks thickly scattered. *Branchlets* dichotomous, and much crowded. *Leaves* opposite, short-petioled, lanceolate, smooth, entire, finely veined; from two to three inches long, and less than one in breadth. *Floral leaves* sessile and coloured, in other respects like the common green leaves. *Peduncles* terminal, pretty long, smooth and slender, embraced generally above their base, by a pair of floral leaves, each bearing an erect umbellet of about six, pretty large, greenish white, fragrant flowers. *Pedicells* about as long as the flowers, and jointed a little below the middle; *no bractæ. Calyx* inferior, tubular, withering; *tube* rather gibbous, hairy within; *border* five-

cleft; *segments* linear, and about as long as the tube. *Corol* none, but there are ten clavate, abortive, filament-like bodies which originate from the mouth of the tube of the calyx, alternate with the true stamina. *Filaments* ten from the mouth of the tube of the calyx, twice as long as the *nectarial clubs*, and rather longer than the segments of the calyx. *Anthers* erect, ovate. *Germ* superior, oblong, remarkably hairy, one-celled, and containing one *ovula* attached to the top of the cell. *Style* the length of the *stamina*. *Stigma* large, round. *Berry* dry, roundish-obovate, size of a large pea, hairy, particularly the somewhat pointed apex, one-celled. *Seed* single, nearly round. *Integument* single. *Perisperm* conform to the seed. *Embryo* inverse, oval, lodged in the upper half of the perisperm. *Cotyledons* thick, semi-circular. *Radicle* conical, superior.

QUISQUALIS. Schreb. gen. n. 739.

Calyx with filiform tube, and five-cleft border. *Petals* five. *Germ* inferior, one-celled; attachment superior. *Drupe* five-seeded.

1. Q. *villosa. R.*

Bractes ensiform. *Petals* obovate-cuneate.

Devee-moung, the vernacular name at *Rangoon.*

From Pegu this elegant, scandent, stout shrub has been sent to me by the Rev. Mr. F. Carey, and differs no doubt, from another species received from Amboyna, which I consider Q. *indica*, on account of the form of the bractes and greater degree of pubescence.

Leaves opposite, or nearly so, short-petioled, ovate-oblong, entire, somewhat acute, slightly villous; about three inches long, and nearly as broad. *Spikes* terminal, and axillary, solitary, villous. *Flowers* numerous, opposite and alternate, sessile. *Bractes* solitary, one-flowered, en-

siform, villous. *Calyx* superior. *Tube* very long, and slender; widening considerably near its five-toothed mouth, somewhat villous on the outside. *Petals* five, obovate-cuneate, inserted into the mouth of the tube of the calyx, alternate with its segments, villous. *Filaments* ten, alternately shorter, inserted below the petals into the mouth of the tube of the calyx, and much shorter than they. *Anthers* oval, incumbent. *Germ* inferior, lanceolar, five-sided, villous, one-celled with generally three, linear *ovula*, attached to the top of the cell, (exactly as in our *combretums*, *Pentapteræ*, and *Terminaliæ*). *Style* blended in the tube of the corol, free at top only, where it emerges from the tube. *Stigma* clavate, perforated.

2. Q. *indica. Willd.* 2. 579.

Bractes oblong-ventricose. *Petals* oblong, very hairy.

Quis-qualis. *Rumph. Amb.* 5. *t.* 38.

A native of Amboyna, where it grows to be a large scandent shrub, with the young shoots very downy.

Leaves sub-opposite, short-petioled, from round-oval to oblong-cordate, entire, villous, their points triangular and acute. *Stipules* none. *Spikes* terminal, and axillary, villous. *Flowers* numerous, opposite, and alternate. *Bractes* solitary, one-flowered, rhombiform and ciliate. *Calyx*. *Tube* filiform, widening just below the five-cleft hairy mouth. *Petals* five, oblong-lanceolar, inserted on the mouth of the tube of the calyx, very hairy. *Filaments* ten, short, in two alternate rows round the mouth of the calyx. *Anthers* oblong, incumbent. *Germ* inferior, oblong, one-celled, and containing generally four *ovula*, attached to the top of the cell, as in the Pegu species, (Q. *villosa*.) *Style* united to the tube of the calyx until it reaches the stamina, where it separates, and ends equal with the anthers, in a large, three-sided, perforated stigma.

GETONIA.

Calyx one-leaved, five-parted, permanent. *Corol* none. *Filaments* inserted into the calyx. *Germ* inferior, one-celled, from two to three-seeded; attachment superior. *Seed* solitary, crowned with the remaining calyx.

1. G. *nutans. R.*

Panicles drooping. *Stamina* one-fourth the length of the calyx.

Found indigenous on the Rajmahl hills by Mr. William Roxburgh; in the Botanic garden at Calcutta it blossoms in February, March, and April. This genus differs from *Combretum* in the want of a corol only, for in some of the species of that genus, there are ten stamina.

Trunk short. *Branches* scandent, or even twining. *Bark* of the young shoots somewhat mealy; of the old and ligneous parts light grey, and pretty smooth. *Leaves* opposite, or nearly so, short-petioled, oblong, and ovate-oblong, entire, acuminate, drooping, while young villous; about six inches long and from two to three broad. *Stipules* none. *Panicles* terminal, and axillary, drooping, composed of several opposite, diverging downy spikes. *Bractes* very downy, lanceolate, one-flowered, shorter than the germ. *Calyx* superior subcampanulate, villous, permanent; *tube* very short; *borders* of five long spreading lanceolate, acute, three-nerved divisions. *Corol* none. *Filaments* ten, about one-fourth the length of the calyx, inserted on its tube. *Anthers* small, incumbent. *Germ* five-ribbed, one-celled, containing for the most part three seeds attached to the top of the cell. *Style* the length of the stamina. *Stigma* simple.

2. G. *floribunda. Roxb. Corom. pl.* 1. *pl.* 61. *t.* 87.

Panicles erect. *Stamina* as long as the divisions of the calyx.

Teling. Bandee mooroodoodoo.

A native of the Circars, flowering in February and March.

Note. Calycopterus. Lamark illust. gen. t. 357. is exceedingly like this, consequently like the former.

TERMINALIA. Schreb. gen. n. 1583.

Calyx five-parted. *Corol* none. *Germ* inferior, one-celled, two-seeded, attachment superior. *Drupe* one-seeded. *Embryo* inverse, spiral, no perisperm.

1. T. *procera. R.*

Branches horizontal, verticelled. *Leaves* cuneate, polished. *Racemes* axillary. *Corol* flat (*rotate.*) *Drupe* oblong, obscurely five-seeded, with the nut of the same shape.

This very charming species is a native of the Andaman Islands, where it grows to be a tree of the first magnitude. From thence it was introduced with many other plants, into the Botanic garden at Calcutta by Col. Alexander Kyd in 1794; and in 1809 they were about fifty feet high, with a slender, perfectly straight smooth trunk, and several verticells of perfectly horizontal branches; with bifarious, alternate branchlets. Flowering time in Bengal the month of March; the fruit ripens in July. Its leaves as in *Catappa*, drop about the beginning of winter in Bengal, and appear with the flowers in March.

Leaves crowded about the ends of the branchlets, short-petioled, cuneate; margins slightly waved, apex rounded, with a large rather obtuse point; perfectly smooth on both sides; veins parallel, and simple, with a small hairy bit in the axill of each, and two glands on the sides of the nerve near the base; from eight to twelve inches long, and from four to five broad. *Racemes* axillary, solitary, shorter than the leaves. *Flowers* numerous, small,

pure white, the hermaphrodite ones are near the base of the raceme ; the male ones farther in. *Calyx* salver-shaped (spreading flat without any tube.) *Stamens* alternately short, and incurved. *Germ* inferior, one-celled, containing two *ovula*, pendulous from the top of the cell. *Drupe* oblong, obscurely five-sided, but not in the least compressed, as in T. *Catappa*, which in most respects this species resembles very exactly, when ripe yellow. *Pulp* in large quantities, of a lively red colour and pleasant subacid taste. *Nut* in shape exactly like the drupe, but the five sides are better defined. *Embryo* with the thin cotyledons wrapped spirally round each other and the superior radicle.

2. T. *Catappa. Willd.* 4. 967.

Branches horizontal, verticelled. *Leaves* obovate. *Racemes* axillary. *Drupe* and *nut* compressed.

Catappa. *Rumph. Amb.* 1. *t.* 68.

Beng. Budam.

Adamaram. *Rheed. Mal.* 4. *t.* 3. 4.

Badamia. *Commersoni Gært. sem.* 1. *t.* 97.

Juglans *Catappa Lourier. Cochin Ch.* 703.

A most beautiful, large tree, found in gardens, &c. near towns and villages, where indigenous, I have not been able to ascertain. On the Coromandel coast it is in flower and fruit almost the whole year.

Trunk straight; *branches* verticelled, spreading horizontally like the different stages of that kind of compound table, called a dumb-waiter. *Branchlets* alternate, bifarious. *Bark* smooth, of a dark olive colour while young. *Leaves* about the extremities of the branchlets, subsessile, horizontal between obovate, and wedge form ; *margins* a little scolloped ; *apex* rounded, with a small obtuse point, smooth on both sides, having a large gland on each side of the nerve near the base on the back, from six to twelve inches long. *Racemes* axillary, solitary, simple,

shorter than the leaves. *Flowers* numerous, small, dull-whitish colour. *Bractes* minute, falling.

MALE FLOWERS most numerous, scattered profusely over every part of the raceme, above the hermaphrodite. *Calyx*, &c. as in the genus.

HERMAPHRODITE FLOWERS a few below the male ones. *Drupe* oval, compressed, smooth, having the margin elevated with a groove on each side; when ripe, of a yellowish colour, *nut* oblong, with a rough surface. *Nucleus* linear-oblong.

The kernels are fully as palatable as the best filberts, or even almonds, and I have every reason to think they are equally wholesome, and nutritive. The tree is highly ornamental, few surpassing it in elegance and beauty. The wood is also useful.

3. T. *belerica. Corom. pl.* 2. *N.* 198.

Leaves crowded about the extremities of the branchlets, long-petioled, oval, with smooth glands on the petioles. *Spikes* axillary, simple. *Calyx* campanulate. *Drupe* oval, downy.

Sans. Vibhituka.
Beng. Buhira.
Arab. Be-ley-luj.
Pers. Be-ley-leh.
Tam. Tandra marum.
Tani. *Rheed. Mal.* 4. *t.* 10.
Teling. Toandee.
Myrobalana. *Belerica. Gœrt. sem.* 2. 90. *t.* 97. *M. M. &c.*

It is a native of the mountainous parts of the Circars, growing to be one of the largest trees, with an erect trunk, and a very large spreading head. Flowering time the beginning of the hot season.

Leaves crowded about the extremities of the branches, petioled, oval, entire, firm, smooth; six or seven inches long, and two and a half broad. *Petioles* round, from

two to three inches long, with two opposite glands on the upper side of the apex, and sometimes near the base. *Spikes* axillary, solitary, simple, erect. *Flowers* small, of a dirty grey colour. The *male* flowers towards the apex of the spike, the *hermaphrodite* ones below. *Calyx, stamens,* and *pistillum* as in the genus. *Drupe* oval, somewhat pentagonal, the size of a nutmeg, fleshy, covered with a grey silky down. *Embryo* inverse, &c.

The kernels of the fruit are eaten by the natives ; they taste like filberts, but are reckoned intoxicating, when eaten in any quantity. Hereabouts they do not use any part of the fruit in medicine, so far as I can learn.

Wood white, rather soft, durable and seldom used. From wounds in the bark, large quantities of an insipid gum issues, it much resembles *Gum arabic,* is perfectly soluble in water, burns away in the flame of a candle, with little smell, into black gritty ashes.

The flowers have a strong offensive smell, not unlike those of *Sterculia fœtida.*

4. T. *moluccana. Willd.* 4. 968.

Leaves alternate, short-petioled, oblong, entire, smooth, without glands. *Spikes* axillary. *Flowers* rotate. *Drupe* obovate, villous.

Sans. Kala Drooma.

The dry fruit of this tree, of which there are two varieties, a larger and a smaller both growing in this garden are so very like the real *Beleric myrobalans*, the produce of my *Terminalia Belerica. Corom. pl.* 2. *N.* 198. as to be sold by the native druggists as such, under the Hindoo name *Bohura*, which is their name for that drug. The trees which produce the above-mentioned large, and smaller sorts, are exactly alike in every other respect except in the size of the fruit. They are natives of the various mountainous countries North East of Bengal.

In this garden they blossom in April and May, and ripen their seed the following March.

Trunk straight. *Branches* sub-verticelled, horizontal. *Bark* pretty smooth, and of a dark brown colour, height of the whole tree about fifty feet. *Leaves* alternate, short-petioled, oblong, obtuse, entire, smooth on both sides, beautifully reticulated with minute veins, while young coloured and villous, from two to twelve inches long, and broad in proportion. *Petioles* scarcely one-fourth the length of the leaves, round, smooth, without glands, and this is the only species of the genus, I have yet met with, that is so, and in this it differs from T. *belerica*. *Spikes* axillary, solitary, shorter than the leaves. *Flowers* numerous, of a dull yellowish brown colour, and rather offensive smell. *Male* towards the apex, and the *hermaphrodite* below. *Calyx* flat, with the apices of the five divisions revolute, villous on the outside, and woolly within. *Filaments* ten, twice or more longer than the calyx. *Germ* and *style* in the male small, and abortive, in the hermaphrodite larger and longer. *Drupe* round-obovate, somewhat villous, size of a large nutmeg. *Nut* the shape of the drupe, slightly five-grooved, from the apex to the base.

For some time I gave this species the trivial name *eglandulosa;* a specimen so named must have fallen into Willdenow's hand to have enabled him to quote me for that name. *See his edition of the species, vol. 4. p.* 968.

5. T. *chebula. Willd.* 4. 969.

Leaves sub-opposite, oblong, villous underneath, glands on the margins and petioles. *Spikes* terminal, often panicled. *Drupe* oval, smooth.

Sans. Haritaka.

T. *chebula. Retz. obs.* 5. 31. *Corom. pl.* 2. *N.* 197. *Asiat. Res.* 11. *p.* 181.

Myrabolana *chebula. Gært. sem.* 2. 91. *t.* 97.

M. *Indica* and *Chebula. Hills. M. M. p.* 500. 1.

Hur, Har*ua*, Hindoo names of the *chebulic myrabolans.*

Teling. and *Tam.* Kadukar.

Zengi, or Zunguhar, the black or Indian myrabolans, and for the Asiatic synonyms of the other varieties, see Dr. Fleming's paper at page 181, in the 11th. volume of the Asiatic Researches above quoted.

A large tree, a native of the forests of India, from Cape Comorin, to the mountains which bound the plains of Bengal, Oude, &c. on the north. Flowering time in Bengal, the hot season. The seed ripens in November and December.

Trunk rarely straight, and but short for the size of the tree. *Bark* in young trees of about seven or eight years growth, of a light ash-colour and slightly cracked, their trunks are then from two to three feet in circumference, three feet above ground. *Branches* many, spreading much in every direction, their extremities often drooping, and while young downy. *Leaves* opposite, or nearly so, short petioled, oblong, entire, obtuse, while young very downy on both surfaces, but when old underneath only, some small glands in the margins near the base, and generally two on the edges of the downy petioles near the apex, about six inches long and three broad. *Stipules* none. *Spikes* in a terminal panicle, or axillary, and there generally undivided, downy. *Flowers* numerous, small, dull white, smell offensive, (as in most, if not all, the other species,) all hermaphrodite. *Bractes* solitary, subulate, downy, one-flowered. *Calyx* bowl-shaped, five-toothed, very hairy, particularly the inside, and five very hairy glands in its bottom, surrounding the base of the style. *Filaments* ten, alternately a little shorter, twice the length of the calyx. *Anthers* small, oval. *Germ* inferior, oval, hairy, one-celled, containing two *ovula* attached to the top of the cell. *Style* rather shorter than the stamina. *Stigma* acute. *Drupe* oval, about an inch and a half

long, and about one inch in diameter, smooth, of a pale greenish yellow, very obscurely five-angled, one-celled. *Pulp* in considerable quantity, hard and yellowish. *Nut* oblong, thick and very hard, with surface rough, the irregularly and obscurely five-grooved, one-celled. *Seed* solitary, lanceolate. *Integument* membranaceous. *Perisperm* none. *Embryo* conform to the seed, inverse. *Cotyledons* thin, and large, and spirally rolled up round each other, and the lower part of the cylindric, superior *radicle*.

The tender leaves, while scarce unfolded, are said to be punctured by an insect, and its eggs deposited therein, which by the extravasation of the sap, become enlarged into hollow galls of various shapes and sizes, but rarely exceeding an inch in diameter. They are powerfully astringent, and make as good ink as oak galls. They also yield the chintz painters on the Coast of Coromandel, their best and most durable yellow. They are called by the Tamuls *Kadu-kai*, and by the Telingas *Aldicai*, and are very like the *Faba Bengalensis* of our Materia Medica.

6. T. *citrina. Roxb.*

Leaves sub-opposite, oblong, with a tapering base, smooth, acute, having two small glands on the apex of the petiole. *Panicles* terminal and axillary. *Nut* five-winged. Myrabolanas *Citrina. Gært. sem.* 2. 91. *t.* 97.

A very large, and tall timber tree, a native of the various extensive forests on the eastern frontier of Bengal where it is called *Hurituki*; it blossoms there in April and May, and the seed ripens in November.

The fruit of this, like that of T. *chebula*, is an article of import in Hindoo Materia Medica and generally, I believe, pass under the same name, so much alike are they, and for the most part employed as gentle purgatives.

Trunk straight, and of very great size. *Branches* spreading, but not much crowded. *Bark* rather scabrous that of the *young shoots* strongly marked with light coloured, elevated specks; wood much like mahogany, but finer grained; a beautiful specimen sent to me by Mr. Smith of Silhet, was accompanied with the following words:—

"*This piece of wood is from a tree which I bought; it "was eighty feet long, one straight body or trunk, and was "nine feet in circumference. This wood is very hard, no "insect will touch it.*"

Leaves sub-opposite, short-petioled, from broad-lanceolar to oblong, tapering less at the base than at the apex, entire, rather obtusely acuminate, smooth and glossy on both sides, from four to six inches long, and from two to three broad; when the plants are young the leaves are villous. *Panicles* terminal, and from the exterior axills, composed of many, simple, erect, slightly villous spikes. *Flowers* numerous, small, of a dull yellow, all hermaphrodite. *Bractes* solitary, one-flowered, subulate, smooth. *Calyx* cup-shaped, five-toothed, hairy on the inside, five, very hairy glands having at the bottom round the base of the style. *Filaments* ten, alternately shorter, but all much longer than the calyx, and inserted into its inside. *Anthers* oval. *Germ* inferior, one-celled containing two *ovula* attached to the top of the cell. *Style* shorter than the stamina, smooth. *Stigma* acute. *Drupe* oblong-lanceolar, about two inches long, and two in circumference where thickest, while fresh obscurely five-cornered but more clearly so when dry, of a dull orange yellow, and smooth. *Nut* oblong, deeply five-grooved, with the five angles sometimes sharp, sometimes rounded, one-celled. *Seed* solitary, linear-lanceolar. *Integument* single, thin, of a light brown. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, thin, and broad, rolled spirally up. *Radicle* superior.

7. T. *angustifolia. Willd.* 4. 970.

Tender parts hairy. *Leaves* narrow-lanceolate, acuminate ; glands on the margin of the base.

Tam. Morgatchee.

A large tree, a native of Tinnivalle and Travancore. It has now been four years in the Botanic garden at Calcutta, in which time they have attained to the height of ten and twelve feet, but have not blossomed. The young leaves are clothed with much ferruginous hair. The fruit so much like the *chebula* myrabolans, as scarcely to be distinguished from it, and they possess the same sensible qualities.

8. T. *gangetica. R.*

Tender parts villous. *Leaves* opposite, and alternate ovate-oblong, acuminate, base abruptly rounded and has some glands in the margin.

A tree, a native of the banks of the Ganges, where it blossoms and ripens its fruit. It is also like the *Chebula myrabolans*, goes by the same general name, Hur or Hura, and is used for the same purposes, so that it is difficult to say which of the last three species deserves most to have the specific name *Chebula* attached to it.

PENTAPTERA. R.

Calyx bowl-shaped, five-toothed. *Corol* none. *Germ* one-celled, *ovula* from two to three, pendulous. *Nut* inferior, woody, five-winged. *Seed* single. *Embryo* inverse, without perisperm, and the two cotyledons spirally rolled up.

1. P. *angustifolia. R.*

Bark smooth ; *branches* drooping. *Leaves* sub-opposite, from lanceolar to linear oblong, smooth, having two

sessile glands at the base, on the margins of the short petiole where it joins the leaf and which are equally conspicuous viewed on either surface. *Spikes* terminal, subpanicled.

A stout timber tree, a native of the Balla-ghaut mountains. Flowering time in the Botanic garden at Calcutta in April and May; the seed ripens about the close of the year.

2. P. *Arjuna. R.*

Bark smooth. *Branches* horizontal. *Leaves* sub-opposite, linear-oblong, with over unequally cordate base, smooth, having two sessile glands underneath the base, and not visible when looking at the upper surface of the leaf.

Sang. Urjoon*a*, also Kukooubh*a*.

Hind. Cahua.

Beng. Urjoon.

A stout quick growing timber tree, a native of various parts of India. It flowers in April and May, and the seed ripens about the close of the year. The margins of the leaves are often slightly crenulate, and the two glands underneath the base are only conspicuous on the under side, whereas in P. *angustifolia*, which this resembles most, they are equally conspicuous in viewing either surface.

3. P. *crenulata. R.*

Bark remote. *Leaves* sub-opposite, oblong, acute, crenulate, smooth, one or two cyathiform glands on the rib, far above the base.

A large timber tree, a native of Coromandel. It flowers in April and May.

4. P. *coriacea. Roxb.*

Leaves sub-opposite, short-petioled, oval, with a cor-

date base, hard above, hoary underneath, having one or two sessile, turbinate glands at or near the base of the nerve. *Spikes* panicled, terminal and axillary. *Nut* hoary.

Tam. Anem*ui* marum.

A timber tree of considerable size, a native of the mountains of Coromandel. It flowers in July. It is nearly allied to *Pentaptera* tomentosa, (which was formerly called *Terminalia alta tomentosa.)* The chief marks of distinction are to be found in all the tender parts, except the hard upper surface of the leaves, that being in this very hoary; the leaves are shorter, broader, and more cordate at the base; the glands sessile, and the nut soft with hoary pubescence.

Trunk tolerably erect. *Bark* ash-coloured, and deeply cracked, even in young trees. *Branches* spreading, with the extremities often drooping, and downy. *Leaves* sub-opposite, short-petioled, oval with a cordate base, and one side generally extending further down on the petiole than the other; obtuse or emarginate, entire, hard, on the upper surface, except while very young hoary and soft underneath, about five or six inches long, and four broad. *Glands* near the base of the rib, or nerve, either one or two, when two they are on opposite sides; turbinate and sessile. *Panicles* terminal, and from the exterior axills, composed of a few, simple, long, cylindric, hoary spikes. *Flowers* sessile, all hermaphrodite, crowded, small, of a dull yellow, with the outside hoary. *Bractes* solitary, one-flowered, linear, the length of the germ, hoary. *Calyx* five or six cleft, hoary without, and very hairy within. In the bottom, round the insertion of the style, are five or six glands, which are so very completely covered, as to seem a tuft of hair only. *Filaments* ten or twelve, much longer than the calyx. *Germ* round, one-celled, containing two *ovula* attached to the top of the cell, immediately under the style;

about as long as the stamina. *Stigma* simple. *Nut* linear-oblong, enlarged with five, very broad, hard, thin, hoary wings, one-celled, size nearly two inches each way, wings included for the diameter of the nut itself, is less than half an inch. *Seed* solitary, linear-lanceolate, acute at both ends. *Perisperm* none. *Embryo* inverse straight. *Cotyledons* two, thin, wrapped spirally round the superior, sub-cylindric *radicle* and each other.

Dr. Andrew Berry, of Madras, who is acquainted with the tree in its native soil, has furnished the following information:

"It is a native of the inland mountains of Coromandel, chiefly those of the western parts. The bark is very thick, and deeply cracked, outwardly of a dark grey colour, inwardly red like dragon's blood. The trunk straight and lofty; wood of considerable diameter, so as to be made into solid wheels for buffalo carts; strong, hard, and heavy.

5. P. *tomentosa. Roxb.*

Bark deeply cracked. *Leaves* sub-opposite, linear-oblong, downy with some turbinated pedicelled glands on the rib near the base.

Sans. *U*sn*a*, Pee*a*ta-sal*uk*a.

Hind. Aans.

Beng. P*ee*a-sal, or *U*san.

Teling. Nella-madoo.

Found in various parts of India, grows to be a large timber tree of much utility. Flowering time April and May, the seed ripens in the cool season.

6. P. *glabra. R.*

Bark smooth; *branchlets* drooping; *leaves* sub-opposite, narrow, oblong, smooth with some sub-pedicelled, umbilicate *glands* towards the base of the rib.

Teling. Tella-madoo.

A timber tree, a native of various parts of India. It flowers in May and the seed ripens in the cool season.

7. P. *bialata. R.*

Arboreous. *Branches* horizontal. *Leaves* alternate, cuneate-oblong, waved, pointed, polished. *Spikes* axillary, drooping. *Drupe* two-winged.

Of this very distinct species, there is a large one in the Botanic garden which blossoms about the beginning of the rains. It is a native of the mountainous parts of India.

Trunk perfectly straight, even up through the horizontal subverticelled branches to the very top; it is from five to six feet in circumference four feet above ground. *Bark* smooth, of a brownish ash colour; the height of the whole tree about fifty feet. *Leaves* alternate, about the ends of the branchlets, long-petioled, oblong-cuneate, entire, acute, with waved margins, smooth, polished, of a deep green on both sides, from four to seven inches long, and from two to three broad. *Petioles* about half the length of the leaves, very smooth, the lower half being round, and the upper half flattened on the upper side. *Spikes* axillary, solitary, smooth, drooping, about as long as both leaf and petiole. *Flowers* numerous, small, of a greenish yellow, hermaphrodite in the lower half of the spike, and male in the rest. *Bractes* minute, one-flowered, caducous. *Calyx* campanulate, five-parted, having the bottom filled with brown hairs. *Filaments* ten, alternately a little shorter, the short ones do not expand so much as the longer five. *Anthers* two-lobed. *Germ* beneath, ovate, villous. *Style* nearly as long as the stamina. *Stigma* acute. *Drupe* oblong, villous, tapering equally towards each end, and enlarged with two broad, membranaceous, waved, villous wings. *Seed* lanceolate. *Embryo* with its two large thin *cotyledons*, rolled spirally up round each other and the superior *radicle.*

8. P. *paniculata. R.*

Branches diverging. *Leaves* sub-opposite, linear-oblong, with a cordate base, entire, smooth, but very hard; there are two sessile umbilicate glands underneath the base. *Panicles* terminal. *Nuts* unequally three-winged.

Tam. Pe-karakai.

Teling. Neemeeri.

A stout timber tree, a native of the peninsula, and from thence introduced by Dr. A. Berry into the Botanic garden at Calcutta, where, in eight years, from the seed the young trees began to blossom in December, and the seed ripened in May, they were then about twenty feet high, and the stems eighteen inches in circumference at four feet above the ground.

CONOCARPUS. Schreb. gen. n. 321.

Flowers aggregate. *Receptacle, common,* globular, that of the corollets columnar raising them above the germ. *Calyx* bowl-shaped, five-toothed. *Corol* none, or five-petalled. *Stamina* five or ten. *Seeds* naked, inferior.

1. C. *latifolia. Roxb.*

Leaves obovate, sub-retuse. *Peduncles* ramous; *corollets* apetalous, decandrous.

Teling. Sheriman.

This is one of the largest timber trees that is to be found amongst the chain of mountains, which separate the Circar from the Mahratta dominions, where it is a native. It flowers during the cold season, January and February.

Trunk erect, straight, varying in length and thickness, the largest are thirty or thirty-five feet to the branches, and about six in circumference. *Bark* pretty smooth, of a light ash colour. *Branches* numerous, spreading, forming a large, high, ever green head. *Leaves* nearly opposite, short-petioled, ovate, generally emarginate,

entire, smooth, from one to four inches long, and from one and a half to two broad. *Peduncles* axillary, short, round, smooth, ramous, each ramification supporting a little globular head, of small yellow corollets. *Calyx, common perianth* scarcely any, a globular common receptacle unites the corollets, with which it is every where covered. No *proper perianth. Corollets* supported upon columnar, partial pedicels, one-petalled, imperforated, five-cleft; *segments* acute, erect, with the bottom woolly. *Filaments* ten, twice the length of the corollets, erect, inserted into the mouth of the tube. *Anthers* oblong, lower, bifid. *Germs* inferior, sessile, compressed, ending in the pedicel of the corollet, which is permanent, and looks like a remaining stile. *Style* awled, rather shorter than the stamen. *Stigma* acute. *Pericarp* none. *Seeds* single, oblong, perpendicularly surrounded with a rigid, narrow ring. *Receptacle* globular, a little scaly.

2. C. *acuminata. R.*

Leaves oval, pointed. *Panicles* undivided; *corollets* apetalous, decandrous.

Teling. Paunchinan.

This second species is also a large timber tree, a native of the same places. It flowers during the cold season.

Trunk equally high with that of the preceding species, but seldom or never straight. *Bark* ash-coloured. *Branches* very numerous, spreading, with their extremities pendulous like the weeping *willow*, the whole forming a most beautiful, large, regular, ever-green top. *Leaves* nearly opposite, short-petioled, oblong, pointed, entire; when young downy; when old smooth, about two inches long, and one broad. *Peduncles* axillary, single, simple, undivided; each bearing one small globular head of small yellow corollets.

These trees are valuable on account of their wood, particularly the first, *Shereman;* its timber is univer-

sally esteemed for almost every economical purpose. Towards the centre it is of a chocolate colour, and is then exceedingly durable. For house and ship building, the natives reckon it superior to every other sort, *Pentaptera tomentosa*, and teak expected.

The wood of Paunchinan is exceedingly like, and fully as strong, and as durable, if kept dry, as the former, but exposed to the water, it soon decays; of course it is unfit for the Marine yard, but equally fit for house building when it can be obtained straight, which is seldom the case.

DECANDRIA DIGYNIA.

TRIANTHEMA. Schreb. gen. n. 762.

Calyx two leaved, or none. *Corol* five-cleft, or five-petalled, daggered under the top. *Capsule* inferior, circumcised.

1. T. *crystallina. Willd.* 2. 635.

Perennial. *Stems* filiform, prostrate, in fact cespitose, dotted with crystalline specks. *Leaves* opposite, broad-lanceolate. *Flowers* single, or in pairs in the forks of the branchlets, pentandrous, monogynous. *Seed* solitary.

Teling. Kooka-pal koora.

A native of Coromandel. It flowers during the rainy and cold season.

2. T. *decandra. Willd.* 2. 636.

Prostrate. *Leaves* elliptic. *Peduncles* many-flowered. *Stamina* from eleven to twelve. *Styles* two. *Capsules* four-seeded.

Teling. Tella galgeroo.

Hind. Gada-buni.

Zallia *Decandra. Birm. Ind.* 110. *t.* 31. *f.* 3.

A common weed in gardens in most parts of India, and in flower and seed great part of the year.

3. T. *obcordata, R.*

Stems prostrate. *Leaves* opposite, alternately, larger and obcordate, smaller and oblong. *Flowers* solitary. *Stamens* from fifteen to twenty. *Style* single. *Capsules* many-seeded.

Swet-sabun*i* the Hindee name of the pale variety, and Lal-sabun*i* the reddish.

Teling. Yurra-galjeror, or Bodo-pail-kura.

It delights in old gardens, rubbish, &c. It flowers all the year round.

Root long, perennial. *Stems* many, diffuse, dichotomous, round, jointed, coloured, a little downy on the upper side. *Leaves* opposite, petioled, obcordate, smooth, waved, with a reddish margin, alternately smaller, the large one being more than an inch each way, and the smaller one less than an inch long and narrow. *Petioles* winged, concave, uniting and clasping the stem, forming a cup with two lateral stipulary, or calyx like processes for the flower. *Flowers* solitary, sessile in the divisions of the branches. *Calyx* no other than the processes of the united petioles. *Corol* as in the genus. *Stamens* from fifteen or twenty in our Indian plant. *Germ* totally superior, turbinate. *Style* single, shorter than the stamens. *Capsule* oblique truncate, circumcised. *Seeds* many, reniform, black, rough. *Receptacle* a line running along the upper side of the bottom of the capsule.

The leaves and tender stops are eaten by the natives.

SAPONARIA. Schreb. gen. n. 769.

Calyx tubulous, naked, five-toothed, permanent. *Corol* of five, long-clawed petals. *Capsule* superior, one-celled. *Seeds* many.

S. *perfoliata. R.*

Calyces gibbous, five-keeled. *Stem* erect, two-forked.

Leaves perfoliate, three-nerved, sublinear, panicles terminal, dichotomous; apices of the petals notched.

A native of Bengal, appearing during the cold season. It has the habit of *Gypsophila perfoliata.*

DIANTHUS. Schreb. gen. n. 770.

Calyx cylindric, one-leafed; at the base four scales. *Petals* clawed. *Capsule* superior, cylindric, one-celled.

1. D. *chinensis. Willd.* 2. 677.

Flowers solitary. *Scales* of the calyx subulate, expanded, as long as the tube. *Petals* crenate. *Leaves* lanceolate.

A native of China, but succeeds well during the cold season in Bengal.

2. D. *Caryophyllus. Willd.* 2. 674.

Flowers solitary. Scales of the calyx ovate, acute, short. *Petals* crenate, beardless.

Pers. Gool Karunphool.

A native of Persia, and succeeds during the cool season in Bengal.

DECANDRIA TRIGYNIA.

SILENE. Schreb. gen. n. 772.

Calyx one-leafed, ventricose, five-toothed. *Petals* five, entire, or bifid, unguiculate, crowned with the nectarium. *Capsule* incompletely three-celled. *Seeds* numerous. *Receptacle* columnar.

S. *indica. R.*

Leaves stem-clasping, lanceolar. *Flowers* terminal. *Calyx* ventricose, ten-angled, with five short teeth. *Pe-*

tals bifid, with a toothlet on each side near the nectary. *Capsule* ovate-oblong, one-celled.

A native of Nepaul. It flowers during the cold season in the Botanic garden at Calcutta.

ARENARIA. Schreb. gen. n. 774.

Calyx five-leaved. *Petals* five, entire. *Capsule* one-celled, many-seeded.

A. *flaccida. R.*

Annual, flaccid, jointed, smooth, dichotomous. *Leaves* in opposite fascicles, filiform, the length of the joints. *Flowers* panicled. *Calyces* rather obtuse. *Capsules* globular. *Seed* reniform, membrane-winged.

This plant greatly resembles *spergula arvensis*, and probably may be a variety of that plant; it is only found during the cold season as a weed in gardens about Calcutta, and may have been accidentally introduced from Europe.

HIRÆA. Schreb. gen. n. 781.

Calyx five-leaved. *Corol* five-petalled. *Germ* superior, three-celled; cells one-seeded; attachment interior. *Seeds (Samara)* three, each with a large membranaceous wing on each side. *Embryo* inverse, without perisperm.

1. H. *nutans. R.*

Shrubby, twining. *Leaves* simple, ovate ventricose, entire, acuminate. *Panicles* terminal, drooping. *Samara* elliptic.

An extensive, twining, shrubby species, a native of the interior parts of Bengal. It flowers in August and September, the seed ripens in November and December. *Stems* ligneous, and with their extensive branches, twining up and over trees of considerable size. Bark of the old

woody parts dark brown, and pretty smooth; *young shoots* pendulous, round, and clothed with closely appressed hairs. *Leaves* opposite, petioled from ovate to cordate, entire, tapering much toward the acute apex, having the upper surface glossy, with a few appressed hairs, and the under paler and more hairy, from four to eight inches long, and from two to five broad. *Petioles* round, hairy, from one to two inches long. *Stipules* minute, subulate, pointed. *Panicles* terminal, and axillary, pendulous, large, composed of many, opposite, diverging, simple or compound racemes, and like the other parts clothed with appressed brown hairs. *Bractes* lanceolate, conic; those of the ramifications solitary, those of the pedicel tern. *Flowers* numerous, opposite, small, yellow, inodorous. *Calyx* five-parted; *segments* equal, oblong, obtuse. *Petals* five, oblong, sessile, expanding; mamelliferous pores. *Filaments* ten, shorter than the petals, base broad and slightly united, inserted into the receptacle round the germ. *Anthers* oblong, erect. *Germ* superior, three-celled, with one *ovula* in each, attached to the axis. *Styles* three, length of the stamina. *Stigma* headed. *Samara* three, united, singly linear, and surrounded with a very large entire reticulate, scarious, elliptical wing, one-celled, evalvular. *Seed* solitary, linear, attached near the apex to the inside of the cell. *Integuments* single, thin, brown. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, equal, linear. *Radicle* ovate, superior.

2. H. *indica. R.*

Shrubby, climbing. *Leaves* opposite, ovate, entire. *Panicles* axillary and terminal. *Samara* linear.

Teling. Regrak tiga.

A native of the Circar mountains.

3. H. *rotundifolia. R.*

Shrubby, twining. *Leaves* orbicular, entire, villous

underneath. *Panicles* axillary, thin, villous. *Samara* orbicular with a small wing on the back.

An extensive perennial, woody rambler, a native of Chittagong. It flowers in March and April.

ERYTHROXYLON. Schreb. gen. n. 783.

Calyx five-toothed. *Corol* five-petalled with emarginate scales over the base on the inside. *Nectary* campanulate divided into ten antheriferous filaments. *Germ* superior, three-celled ; attachment superior. *Drupe* one-seeded. *Embryo* inverse, furnished with a perisperm.

1. E. *monogyum. R. Corom. pl.* 1. *p.* 61. *t.* 88.

Leaves subsessile, cuneate, entire. *Stipules* conic acute. *Flowers* axillary, one or two. *Style* single. *Stigmas* three. *Drupe* oblong.

Teling. Adivi gerenta.

2. E. *sideroxyloides. Lamark Encycl.* 2. *f.* 390. *Willd.* 2. *f.* 748.

A native of Coromandel, Ceylon, &c. It flowers during the greater part of the year.

From Ceylon General Macdowall sent it to the Botanic garden at Calcutta, under the name of the Fen tree.

3. E. *laurifolium. Willd.* 2. 749.

Arboreous. *Leaves* short-petioled, oblong, obtuse, lucid. *Peduncles* axillary, crowded, longer than the flowers. Nectarial scales with truncate, porous apices. *Stamina* monodephous.

Found by Colonel Hardwicke indigenous on the Mauritius in flower in August.

DECANDRIA PENTAGYNIA.

AILANTHUS. Schreb. gen. n. 167.

Polygamous. *Male calyx* five-toothed; *corol* five-petalled.

Hermaphrodite calyx and *corol* as in the male. *Germ* from three to five. *Capsules* (Samara) from three to five, one-seeded.

A. *excelsa. Willd.* 4. 974. *R. Corom. pl.* 1. *N.* 13.

Leaves abruptly pinnate; *leaflets* twelve pair, petiolet-ted, opposite, broad-falcate-lanceolate, grossly serrate.

An immense tree, a native of the interior of Coromandel. It flowers during the cold season. The wood is white and soft, consequently of little use.

AVERRHOA. Schreb. gen. n. 784.

Calyx five-leaved. *Corol* five-petalled, campanulate. *Germ* superior, five-celled cells; few-seeded; attachment interior. *Pomum* angular, five-celled. *Embryo* inverse and furnished with a perisperm.

1. A. *Carambola. Willd.* 2. 750.

Pomum oblong, acute-angled. *Leaflets* ovate.

Tamara tonga. *Rheed. Mal.* 3. *t.* 43. *and* 44.

Sans. Karmurunga.

Hind. and *Beng.* Kamarunga.

Native place uncertain, but common in gardens all over India. There are two varieties; one producing a sweet, the other a sour fruit. In Bengal both blossom during the rainy season, and the fruit ripens during the cool months of December and January.

2. A. *bilimbi. Willd.* 2. 749.

Leaves pinnate, many paired ; *leaflets* ovate-lanceolate. *Fruit* oblong, obtuse-angled.

Bilimbi. *Rheed. Mal.* 3. *t.* 45 *and* 46.

Blinbingun teres. *Rumph. Amb.* 1. *t.* 36.

This pretty little tree I have only found in a cultivated state ; where it is indigenous I cannot say. In Bengal it is uncommon ; and in the Botanic garden flowers in March and April, and the fruit ripens in about two months. For the uses of the fruit of these two species I refer to Rumphius.

SPONDIAS. Schreb. gen. n. 784.

Calyx five-toothed. *Corol* five-petalled. *Germ* superior, five-celled ; cells one-seeded ; attachment superior. *Drupe* with a five-celled nut. *Seed* solitary. *Embryo* inverse, without perisperm.

1. S. *mangifera. Willd.* 2. 751.

Leaflets four or five-pairs, oblong, mucronate. *Panicles* diffuse. *Nut* oblong, nearly smooth on the outside.

Ambalam. *Rheed. Mal.* 1. *t.* 50.

Amrataca. *Asiat. Res.* 4. *p.* 284.

Hind. and *Beng.* Amra.

Teling. Amatum.

Ponastia. *Juss. Genera. plant.* 410.

Spondius *amara. Lamark Encycl.* 4. *p.* 245.

Mangifera *pinnata. Linn. suppl. plant. p.* 56.

This is a large tree, amongst the mountains of Coromandel, but in gardens where it is frequently found cultivated, it is of a smaller size, and low. Flowering time the beginning of the hot season, when the leaves come out. The fruit ripens during the cold season, and then its leaves are deciduous.

Trunk straight, in our gardens from one to two feet in diameter. *Bark* smooth, ash-coloured, astringent. *Branches* nearly horizontal. *Leaves* alternate about the extremities of the branches, pinnate with an odd one, from twelve to twenty inches long. *Leaflets* about five pair, opposite, oval, pointed, entire, smooth, veined; from three to six inches long, and two or two and a half broad. *Petioles* round, smooth. *Stipules* none. *Panicles* terminal, very large, diffuse, and thin. *Flowers* very numerous, small, white, mostly barren, though no male flower (apparently so) is to be found. *Calyx* below, small, five-toothed. *Petals* five, oblong, spreading. *Nectary* a large fleshy notched ring surrounding the germ. *Filaments* ten, awled, alternately shorter, incurved, scarcely half the length of the petals. *Anthers* small. *Germ* ovate, five-celled, with one *ovula* in each, attached to the top of the axis. *Styles* five, short, erect, distant. *Stigmas* simple. *Drupe* oval, fleshy smooth, the size of a pullet's egg, when ripe, yellow. *Nut* oblong, woody, very hard, outwardly fibrous, five-celled, but seldom more than one, two or three of them produce seed. *Seed* lanceolate. *Embryo* inverse, without perisperm.

The wood of this tree is soft, and of little or no use. From wounds made in the bark, about the beginning of the hot season, very large quantities of a transparent juice issues, which soon hardens into a mild insipid gum, exactly like gum-arabic.

The fruit is eaten raw when ripe, and before ripe is pickled, put in curries, made into tarts, &c. &c.

2. S. *dulcis. Willd.* 2. 752.

Leaves from six to seven pair, oblong, serrulate. *Panicles* terminal. *Nut* round, armed.

S. *cytheria. Lamark. Encycl.* 4. 245. *Gært. sem.* 2. 101. *t.* 103. *Sonnerat.* 2. 222. *t.* 123.

A native of the Society Islands, and now common in

the Botanic garden at Calcutta where it grows to be a large tree with an extensive, very ramous head. Flowering time in Bengal, March; the fruit ripens about the close of the rains.

3. S. *acuminata. R.*

Leaflets from five to eight pair, subopposite, long, oval, remotely crenulate, acuminate, polished; *petioles* cylindric.

A most elegant, middling-sized tree, with an uncommonly dense crown, a native of Malabar. In the Botanic garden at Calcutta young trees reared from the seed, were in four years twenty feet high; the *trunk* perfectly straight; the *bark* smooth, olive grey; the *branches* spreading in all directions from erecto-patens above, to divaricate below.

4. S. *longifolia. R.*

Bark verrucose. *Leaflets* opposite and alternate, from ten to twelve pair, very unequally ovate-oblong, entire, lucid, obtusely acuminate.

From the Mauritius this very distinct species has been introduced into the Botanic garden at Calcutta, where its growth is rapid; it is nearly straight, with a few stout, patently diverging, almost, simple *branches*, very rough with brown tubercles; the leaflets very unequally divided by the nerve.

5. S. *axillaris. R.*

Leaflets from six to eight pair, ovate-lanceolate, gash-serrate cuspidate. *Peduncles* axillary, few-flowered. *Nut* oval, smooth.

A small beautiful *Melia* looking tree, a native of Nepal. In the Botanic garden at Calcutta it flowers in March, and the seed ripens about the close of the rains.

CNESTIS. Juss.

Calyx five-leaved (five-parted, Juss.) *Corol* five-petalled. *Germ* five, superior, one-celled, one-seeded; attachment inferior. *Capsules* from one to five, one-celled, one-valved (two-valved, Juss.) *Seeds* solitary, attached to the base of the cell. *Embryo* inverse, without perisperm.

C. *monadelpha. R.*

Shrubby. *Leaves* pinnate; *leaflets* five or seven, subalternate, oblong, obtuse, acuminate, polished. *Panicles* axillary, crowded. *Filaments* united at the base.

Sook*u*rt*o*thee of the Hindus about Silhet, where the shrub grows. It is also found on the hills of Chittagong, and there called *Kowatothee;* the natives eat the fresh aril of the ripe seeds. Flowering time the rainy season; the seed ripens in October.

Compare with *Gœrtner's Aegiceras minus.*

Leaves alternate, unequally pinnate; from six to eight inches long. *Leaflets* five or seven, sub-alternate, short-petiolate, from ovate to oblong, entire, firm, polished, obtusely acuminate, from two to five inches long, and from one to two broad, the exterior by far the largest. *Stipules* ensiform. *Panicles* axillary, several together; slender, smooth, nearly as long as the leaves. *Flowers* numerous, small, sub-campanulate, white and fragrant. *Calyx* five-leaved; *leaflets* broad-ovate, subciliate, permanent. *Petals* five, linear-oblong, margins connected for a little way near the base, above that sub-campanulate. *Filaments* ten, alternately long, broad toward the base, and there united into a ring round the lower half of the germ. *Anthers* oval, incumbent.

Germs five, each one-celled, and containing a single *ovula*, attached to the bottom of the cell. *Styles* five, scarcely half the length of the stamina, recurvate. *Stigmas* simple. *Capsule* solitary; the four abortive germs may be found under its base, now minute, dry and compressed, obliquely ovate-oblong, coriaceous, smooth, about an inch, or three quarters long, one-celled, one-valved, one-seeded, opening along the whole of the inside, exposing the seed before quite ripe. *Seed* solitary, attached to the bottom of the capsule, as in the germ, ovate, invested in a complete orange-coloured aril. *Perisperm* none. *Embryo* conform to the seed, inverse. *Cotyledons* thick fleshy, of a pale green. *Radicle* patelliform.

ROBERGIA. Schreb. gen. n. 787.

Calyx five-parted. *Petals* five. *Drupe* one-celled, with two-valved nut. *Seed* solitary. *Embryo* inverse, and furnished with a perisperm.

R. hirsuta. R.

Shrubby, scandent, hairy. *Leaves* unequally pinnate; *leaflets* from four to eight pair, oblong-cordate, entire. *Panicles* terminal and axillary.

A native of Chittagong, where it blossoms in March.

The cortex of the drupe has its inner lamina perforated with large cells filled with a fragrant, clammy, brownish balsam.

COTYLEDON. Schreb. gen. n. 788.

Calyx four or five-cleft. *Corol* one-petalled, four or five cleft. *Nectary* of four or five awled scales embracing the germs. *Capsules* four or five. *Seeds* numerous.

1. C. *laciniata. Willd.* 2. 758.

Perennial. *Leaves* decompound, pinnatifid, and simple. *Flowers* octandrous.

Planta anatis. *Rumph. Amb.* 5. *t.* 95.

Hemasagara. *Asiat. Res.* 4. *p.* 284.

Beng. Hemśagur.

Found in gardens about Calcutta, and in flower during the rainy season.

2. C. *rhizophylla. R.*

Shrubby, succulent. *Leaves* fleshy, simple and pinnate, crenate, viviparous. *Flowers* pendulous, octandrous.

A native of the Moluccas, in the Botanic garden at Calcutta; it blossoms in the cold season. When leaves are placed in a damp place and shaded, young plants spring from their crenatures.

3. C. *heterophylla. R.*

Perennial, succulent, smooth. *Leaves* opposite, petioled; in young plants ternate, when more advanced simple, ovate-oblong, slightly laciniate, fleshy, smooth. *Corymbs* decompound. *Flowers* octandrous.

A native of Mysore, in the Botanic garden at Calcutta; it blossoms during the cool season.

BERGIA. Schreb. gen. n. 791.

Calyx five-parted. *Corol* five-petalled. *Capsule* superior, globular, protuberant, five-celled, five-valved, valvelets petal like. *Seeds* most numerous.

1. B. *verticillata. Willd.* 2. 770.

Creeping, annual. *Leaves* lanceolar, serrate, smooth. *Flowers* axillary, sessile, numerous.

Pola-tsjira. *Rheed. Mal.* 9. *t.* 78.

Teling. Neeroo-pavala.

Hind. and *Beng.* Lal-khesura.

A native of various parts of India in wet places during the rainy season.

2. B. *ammanioides. Roxb.*

Annual, erect, ramous. *Flowers* axillary crowded with stamina, corresponding in number with the parts of the calyx and corol.

Lechea *verticillata. Willd.* 1. *p.* 495.

A native of various parts of India; it appears and flowers during the rains and cool season.

OXALIS. Schreb. gen. n. 794.

Calyx five-leaved. *Corol* five-parted, cohering above the claws. *Capsule*, superior, five-celled, five-valved, five-cornered, opening at the angles.

1. O. *corniculata. Willd.* 2. 800.

Creeping, ramous, villous. *Leaves* ternate. *Peduncles* longer than the leaves, umbelliferous. *Flowers* monadelphous. *Filaments* alternately shorter and sterile. *Capsule* subcylindric.

2. O. *pusilla. Salisbury in Trans. of Linn. Soc.* 2. 243.

Sans. Amlulonika, Chukrika.

Beng. Amrool.

Common all over India, delighting in cool, dark, shady moist places, where it blossoms most part of the year.

3. O. *sensitiva. Willd.* 2. 804.

Leaves pinnate. *Peduncles* umbelliferous.

Hind. Lak chana.

Todda vaddi. *Rheed. Mal.* 9. *t.* 19. is a pretty good representation of a young plant, while Herba sentiens, *Rumph. Amb.* 5. *t.* 104. *f.* 2. is tolerable for an old one.

Common all over India, and in flower the whole year.

CERASTIUM. Schreb. gen. n. 797.

Calyx five-leaved. *Petals* two-cleft. *Capsule* one-celled, gaping at top.

C. *cordifolium. R.*

Annual, flaccid, ramous. *Leaves* opposite, the lower ones petioled, the superior ones stem-clasping. *Peduncles* solitary, one-flowered, hairy.

A native of Bengal, where it appears as a weed in our gardens and cultivated fields during the cool season.

DECANDRIA DECAGYNIA.

PHYTOLACCA. Schreb. gen. n. 800.

Calyx none. *Petals* calycine. *Berry* superior, ten-celled ten-seeded (or compound,) with a seed in each acinus.

P. acinosa. R.

Herbaceous, erect, ramous. *Leaves* oblong. *Flowers* decandrous. *Berries* composed of from six to eight distinct acini.

A native of Nepal. It flowers about the end of the cool and the beginning of the hot season in the Botanic garden at Calcutta. The leaves are used by the natives of Napal in their diet.

CLASS XI.

DODECANDRIA MONOGYNIA.

RHIZOPHORA. Schreb. gen. n. 806.

Calyx from four to many-cleft. *Corol* from four to many-petalled. *Stamina* from eight to many. *Germ* inferior, from three to four-celled; cells from one to two-seeded; attachment superior. *Pericarp* none. *Seed* solitary, subcylindric. *Embryo* inverse, no perisperm.

1. R. *mangle. Willd.* 2. 843.

Leaves opposite, oblong, cuspidate. *Peduncles* three-flowered. *Flowers* octandrous. *Fruit* subulate-clavate.

Pee-candel. *Rheed. Mal.* 6. *t.* 34.

Teling. Upoo-poma.

Mangium calendarium. *Rumph. Amb.* 3. *t.* 71.

Bhora of the inhabitants of the Delta of the Ganges, where it grows to be a tree of considerable size.

Leaves opposite, petioled, decussate, oblong, entire, cuspidate, smooth on both sides, fleshy, veinless, marked with numerous, blackish minute dots underneath; from four to six inches long. *Petioles* round, about an inch long. *Stipules* large, in pairs within the leaves, caducous. *Peduncles* axillary, solitary, recurved, generally three-flowered, smooth, compressed, bracted at the apex, where it divides. *Pedicles* short, thick and ending in a cup-like bracte, in which the flower sits. *Calyx* four-leaved. *Leaflets* oblong, permanent. *Petals* four, lanceolate, having the inside and margins very woolly. *Filaments* always eight, very short. *Anthers* linear. *Germ* superior, four-celled, each containing a single *ovula* attached to the upper end of the axis. *Style* thick. *Stigma* bidentate. *Seed* clavate, pendulous, from one to two feet long, pretty

smooth, its base inserted, (as in a socket, into a large firm flask-shaped receptacle, which I take to be the albumen and vitellus of Gærtner. If the seed be erect, the permanent calyx adheres to its globular base. *Perisperm* none. *Embryo* inverse. *Cotyledons* undetermined. *Plumula* of a long, sharp, conical shape, two-lobed ; plumula within. *Radicle* conform to the seed, superior, the real root proceeds from its apex.

The great length of the seed of this species, gives in a very short time a young tree ; for if the apex from whence the root issues, is only stuck a little way into a wet soil, or mud, the leaves quickly unfold at the opposite end, as mentioned by Brown in his History of Jamaica.

The wood of this tree is of a dark reddish colour, hard and durable.

2. R. *gymnorhiza. Willd.* 2. 843.

Leaves opposite, oblong and broad-lanceolar, smooth. *Flowers* solitary. *Calyx* many-cleft. *Stamens* twenty or more.

Kandel. *Rheed. Mal.* 6. *t.* 31. *and* 31. *good. Rumphius's* figures are not so good.

Kakr*a* of the inhabitants of the Delta of Ganges, where, in such places as the spring tides rise over, it grows in abundance to be a tree of considerable magnitude.

Trunk generally dividing before it reaches the ground, like a parcel of hop-poles piled up in form of a cone. *Leaves* opposite, decussate, crowded about the ends of the branches, petioled, erect, oblong, pointed, very smooth, entire, firm, and somewhat fleshy, almost veinless ; generally about six inches long. *Petioles* from one to two inches long, channelled. *Stipules* large, within the leaves, caducous. *Peduncles* axillary, solitary, one-flowered, shorter than the petioles, nodding. *Calyx* about twelve-cleft ; *divisions* tapering, acute, a little incurved, fleshy, smooth, permanent. *Petals* just as many as the divisions of the calyx, of nearly the same length, and inserted on

its inside, opposite to the fissures thereof; at the base they are formed into a tube opening on the inside, and there bearded; *apex* two-lobed, and ornamented with, generally, five short filaments. *Stamens* just twice as many as there are petals in the corol, two being found enclosed within each of them. *Filaments* half the length of the petals, unequal, the interior one of the pair being shorter. *Anthers* linear, erect, with their apices sharp and incurved. *Germ* inferior, turbinate, three or four-celled, with two *ovula* in each. *Style* the length of the stamens. *Stigma* slightly three or four pointed. *Pericarp* no other than the permanent calyx, in which the *plumula*, or ascending part of the embryo on the base of the seed is lodged. *Seeds* solitary, subcylindric, tapering equally towards each end, pendulous; the *plumula*, or ascending part of the future plant is lodged on the base, while from its apex the *rostellum*, or root issues.

The wood is of a yellowish colour, hard and durable; its chief use is for burning, and for posts with which to construct the houses of the natives.

3. R. *parviflora. R.*

Leaves ventricose-oblong. *Peduncles* axillary, many-flowered; *calyx* eight-cleft. *Stamina* eight pair, embraced by the eight petals. *Fruit* subcylindric.

A small, very ramous, smooth, glossy tree, a native of the salt, and brackish creeks, &c. of the Delta of the Ganges. Flowering time December. *Leaves* opposite, crowded about the ends of the smooth twigs, short-petioled, from broad-lanceolar to ventricose-oblong, entire, firm and polished; from four to five inches long, and from one to two broad. *Stipules* large, within the leaves, &c. as in the *Fici*. *Peduncles* axillary, once or twice trichotomous, smooth. *Bractes* small. *Flowers* small, one on each division of the peduncles. *Calyx* eight-cleft; *segments* acute. *Petals* eight, considerably shorter than the

segments of the calyx, deeply emarginate, and bearded; sides incurved, round the two stamina. *Filaments* sixteen, unequal, inserted by pairs into the receptacle immediately within the petals, and closely embraced by their incurved sides. *Anthers* sagittate. *Germ* inferior, cylindric, furrowed, three-celled, containing in each two *ovula* attached to the top of the axis. *Style* shorter than the petals. *Stigma* three-toothed.

TRIUMFETTA. Schreb. gen. n. 819.

Calyx five-leaved. *Corol* five-petalled. *Germ* superior, from three to four-celled; cells one or two-seeded; attachment superior. *Capsule* hispid, three or four-partible. *Embryo* inverse, and furnished with a perisperm.

1. T. *trilocularis. Roxb.*

Shrubby. *Leaves* three-lobed, serrate, from three to five-nerved, downy. *Racemes* terminal; *flowers* complete. *Capsule* three-celled.

A native of India. In the Botanic garden at Calcutta it blossoms during the cool season, viz. November, December, January and February, and the seeds ripen from March to June.

Stem short, stout and ligneous; covered with pretty smooth ash-coloured *bark*. *Branches* numerous. *Young shoots* clothed with stellated pubescence. Height of plants three or four years old, five feet. *Leaves* alternate, petioled, broad-cordate, three-lobed, from three to five-nerved, unequally serrate; both sides clothed with soft pubescence. Those next the racemes ovate-oblong, from one to six inches long. *Stipules* ensiform. *Racemes* terminal. *Peduncles* verticelled, three-flowered. *Bractes* numerous, the large solitary one at each verticel may be called a floral leaf, its lower serrature on each side glandular, the rest ensiform. *Flowers* numerous, small, yellow, pedicelled. *Calyx, color,* and *stamina* as in the genus.

Nectarium, a slender, crenulate cup round the insertion of the petals. *Germ* round, echinate, three-celled, with two seeds in each, attached to the upper end of the axis. *Style* simple, length of the petals. *Stigma* minute, obscurely three-toothed. *Capsule* globose, of the size of a pea, brown, and of a tough coriaceous texture, armed with numerous, diverging uncinate, backwardly hispid bristles, marked with three small sutures, which do not open, (three-celled.) *Seeds* two in each cell, obliquely ovate, of a brown colour. *Integuments* two, the exterior one thin, the *inner* one thick and tough. *Perisperm* conform to the seed. *Embryo* straight, inverse, the length of the perisperm, yellowish. *Cotyledons* oval. *Radicle* cylindric, superior.

2. T. *Bartramia. Willd.* 2. 854.

Annual, erect, ramous. *Leaves* with the anterior part three-lobed, serrate, hairy. *Flowers* axillary.

Beng. Bun-okra.

Lappago Amboinica. *Rumph. Amb.* 6. *p.* 59. *t.* 25. *f.* 2.

A native of various parts of India.

PORTULACA. Schreb. gen. n. 824.

Calyx two-cleft. *Corol* four or five-petalled. *Capsule* circumcised.

1. P. *oleracea. Willd.* 2. 859.

Leaves cunieform. *Flowers* sessile.

Hind. and *Beng.* Loonya or Nooniya shak.

Arab. Khurfa also Tooruk.

2. P. *meridiana. Willd.* 2. 861.

Annual, creeping, the joints hairy. *Leaves* oblong, fleshy. *Flowers* subsessile, with four floral leaves and a hairy involucre. *Petals* four. *Stamina* from six to eight.

Nela tsjera. *Rheed. Mal.* 10. *t.* 31. which Willdenow quotes for his *Oldenlandia depressa*. Are they the same?

Teling. Pail-kura.

Beng. Nooniya.

Its flowers open at noon, and shut at two. It is common in gardens, chiefly as a weed, though much used by the natives of Coromandel, as a pot-herb.

3. P. *quadrifida. Willd.* 2. 860.

Creeping; joints hairy. *Leaves* oblong, fleshy. *Flowers* subsessile, with four floral leaves; *petals* four; *stamens* ten or twelve.

Teling. Pedda pail-kura.

It is much like P. *meridiana*, but a much rarer plant, and considerably larger in all its parts, in the form, &c. of its stems, branches, leaves, hairs that surround the joints, and the insertion of the leaves and flowers, four terminal leaves, or bractes, &c. they are nearly alike; but in this species there are from ten to twelve stamens, and always four stigmas, which are the chief marks by which it is distinguished from *meridiana.*

The natives do not eat this sort; they reckon it very unwholesome, and apt to produce stupefaction.

The flowers expand at or before noon, and continue open till near sun-set; this is another circumstance which marks its being a distinct species, and no variety of P. *meridiana.*

4. P. *tuberosa. R.*

Root tuberosus and villous. *Leaves* alternate, lanceolate. *Flowers* terminal.

A native of the Circars. It flowers during the rainy season.

TALINUM. Juss.

Calyx two-leaved. *Corol* five-petalled. *Germ* superior, one-celled, many-seeded; attachment inferior. *Capsule* three-valved, one-celled. *Seeds* several.

T. *cuneifolium. Willd.* 2. 864.

Leaves obovate, cuneate, smooth, entire, fleshy. *Panicle* terminal, inferior peduncle from two to four-flowered.

Native place uncertain. In the Botanic garden at Calcutta, it flowers chiefly during the rains, and ripens abundance of seed in the cool season.

PEMPHIS. Forst.

Calyx tubular, twelve-toothed. *Petals* six. *Germ* semitrilocular; *ovula* many on a receptacle rising from the bottom of the cell. *Capsule* superior, one-celled, many-seeded.

P. *angustifolia. R.*

Shrubby, hoary. *Leaves* opposite, sessile, lanceolar.

Found by Colonel Hardwicke, growing on the shores in corol sand between Port Louis and Petit Rivier, on the Mauritius; in flower in August. At a distance, he says, it resembles much a common Myrtle bush.

DODECANDRIA TRIGYNIA.

EUPHORBIA. Schreb. gen. n. 823.

Calyx one-leafed, gibbous. *Corol* four or five-petalled, sitting on the calyx. *Capsule* tricoccous.

1. E. *ligularia. R.*

Arboreous; *branches* five-angled. *Flowers* stipulary. *Leaves* petioled, wedge-shaped. *Peduncles* from three to fifteen-flowered.

Ligularia. *Rumph. Amb.* 4. *t.* 40.

Beng. Munsa-sij.

I have only found this plant in Bengal, about the

houses of the natives. Flowering time the months of February and March; when perfectly destitute of foliage, ripe seed not seen.

Root branchy. *Trunk* when twenty years old, round and scabrous, often a foot in diameter, the whole height of the largest trees seldom more than twenty feet. *Branches* scattered, ascending, having the *young shoots* constantly five-sided, *angled*, somewhat spirally disposed and armed with elevations like the teeth of the largest saw; each of these supports a leaf, and a pair of short, sharp, black, hard, stipulary thorns. Like the other species every part abounds with acrid milky juice, which is employed to remove warts, cure cutaneous eruptions, &c.

Leaves alternate, about the summits of the branches, short-petioled, inserted singly on the elevations, or serratures of the angles of the branches, wedge-shaped, entire, waved, fleshy, smooth on both sides, almost veinless from six to twelve inches long, and two or three broad, deciduous at the beginning of the cool season, and appearing again after the flowers decay, in March or April. *Peduncles* solitary in the sinuses between the serratures of the angles of the branchlets, short, once, twice, or thrice dichotomous, with a sessile flower in the forks, that is, bearing three, seven, or fifteen flowers. The sessile flower which is the largest, is often entirely male, the lateral, or terminal peduncled ones have always been found to contain one pistil; and male florets. *Flowers* middling sized, greenish yellow. *Bractes* reniform, opposite, embracing the base of the pedicels on the outside, withering. *Calyx** five petal-

* The calyx and corol, as hinted by that excellent Botanist Jussieu, in his Genera Plantarum, page 424, may be considered a common perianth, or involucre to many male florets only; or encircling one female. The plants bearing such compound flowers,

I have

led. *Petals* round-cordate, fringed with a finely ragged margin inserted into the calyx, just under its fissures. *Stamina* collected into five fascicles; *male florets* of about five each, which expand in succession, and are surrounded with an uncertain number of finely divided petals, or scales. *Anthers* four-lobed. *Germ* pedicelled, somewhat two-lobed, three-celled, with one seed in each, attached to the top of the axis. *Style* short. *Stigma* three-cleft.

This plant is sacred to Munsa, the goddess of serpents. The root of the tree mixed up with black pepper, is employed for the cure of their bites; both internally and externally. In the months of July and August, on Tuesdays and Saturdays, the natives approach the tree with offerings, and pray to Munsa to be preserved from the bite of snakes. I suspect this and Euphorbia nereifolia, have hitherto been considered as one species, both being quoted for the last by Linnæus, Burman, &c. I have for these fourteen years had both growing in this garden, so that I do not hesitate to pronounce them totally distinct, and clearly marked.

2. E. *nereifolia. Willd.* 2. 984.

Arboreous. *Branches* round. *Thorns* stipulary. *Leaves* subsessile, wedge-shaped. *Peduncles* three-flowered.

Ela-calli. *Rheed. Mal.* 2. *t.* 43.

Tithimalus zeylanicus. *Pluck.* 2. *t.* 330. *f.* 4.

I have observed to be arboreous or shrubby, with the branches angular, or cornered, and armed with stipulary spines, namely, E. *antiquorum;* and three other East Indian triangular species, one round E. *nereifolia,* five and one-angled *ligularia* of *Rumphius;* and very lately from Pegu, a small, shrubby, tuberous-rooted unarmed species, with similar flowers, has come to my knowledge; a drawing and description thereof accompanies this under the name E. *sessiliflora.*

Beng. Sij.

It grows to be a small, poor looking tree, delighting in an almost dry, barren soil. Flowering time the hot season.

3. E. *antiquorum. Willd.* 2. 881.

Shrubby, leafless. *Branches* spreading, triangular, armed with double spines at the protuberances of the angles. *Peduncles* solitary or in pairs; three-flowered.

Sanscrit, Seehoondee.

Beng. Nara-shij.

Teling. Buma chumadoo.

Schadida calli. *Rheed. Mal.* 2. *t.* 42.

Very common on barren uncultivated lands all over India. In Bengal it blossoms during the cold season.

4. E. *arborescens. R.*

Arboreous, leafless. *Branches* numerous, ascending, triangular, armed, as in *antiquorum.*

Native place uncertain, but I believe, Bengal. In the Botanic garden at Calcutta it grows to be a pretty large tree, with a round distinct trunk, and numerous branches forming a large, dense, subglobular head.

5. E. *lactea. R.*

Shrubby, erect. *Branches* erect, appressed, triangular, armed, leafless.

A native of the Moluccas, differing from *antiquorum* in being more slender, in having the centre of the three sides milky coloured, and particularly in the erect appressed habit of the numerous branches. It has been twelve years in the Botanic garden at Calcutta, but has not yet blossomed.

6. E. *trigona. R.*

Shrubby, three-sided; angles deeply repand with a pair of short spines, and a large sessile obovate cuneate

leaf from the apex of each tubercle. *Peduncles* three-flowered. This pretty species of *Euphorbia* was brought from the Molucca Islands to the Botanic garden at Calcutta in 1798, where it thrives well, and blossoms in February, March, and April.

Stem erect, three-sided, with a few scattered, ascending, smooth, deep green, succulent branches; these are all three-sided, with the angles considerably extended into large, scollop-toothed tubercles; the extremity of each is armed with two short, sharp spines, and like the rest of the family every part abounds with much acrid, milky juice; the general height of the plants, when ten years old, six or seven feet. *Leaves* solitary, one between each pair of spines at the end of the tubercles, sessile, wedge-shaped, entire, smooth on both sides, having the upper side of a deep green, and being much paler underneath, from one to two inches long, and less than half that in breadth. *Stipules*, on the upper side of the base of each spine, is a small, somewhat acute, hard, brown gland, not unlike the spines themselves, but much smaller. *Peduncles* from the sinuses on the angles of the branches, short, thick, generally three-flowered, the main one sessile, containing five fascicles of staminary male florets only; the lateral pedicelled flowers, contain one female and five male florets. *Calyx* in both five-parted; *segments* two-edged, entering the calyx below its fissures, roundish, jagged, incurvate over the male and hermaphrodite flowers, there are five segments of the male florets those are in fascicles of about six each, lengthening and expanding in succession, these are also surrounded by several multifid scales, or petals. *Anthers* of two round lobes. *Germ* superior, short-pedicelled, ovate, three-sided, three-celled, with one seed in each, attached to the top of the axis. *Style* short, half three-cleft. *Stigmas* emarginate. The ripe seed not found.

7. E. *Tirucalli. Willd.* 2. 890.

Arboreous, unarmed branchlets, cylindric, succulent, polished, from alternate to crowded. *Leaves* linear, sessile. *Flowers* terminal, and in the forks of the branchlets.

Tirucalli. *Rheed. Mal.* 2. *t.* 44.

Ossifraga-lactea. *Rumph. Amb.* 7. *t.* 29.

Beng. Lunka sij.

Tam. Tiru calli.

A native of various parts of India; when well advanced in age and size it flowers during the rains. About Madras it is very generally employed for fences, and there called Milk hedge.

Trunk of old trees as thick as a man's thigh or more. *Bark* dark olive-coloured and cracked. *Wood* white, pretty close grained, and of a middling hardness. *Branches* very numerous; *young shoots* from alternate to crowded into the form of an umbel, proliferous, succulent, smooth, polished, green points abrupt. Every part abounding in an acrid milky juice. General height of what may be called large trees, twenty feet. *Leaves* alternate, remote, and at the end of the twigs chiefly sessile, linear, smooth, small and fleshy. *Flowers* at the end of the twigs and in the divisions of the branchlets, crowded, subsessile, chiefly female, or abortive hermaphrodite, small, pale yellow. *Calyx* campanulate; *mouth* enlarged by three or four, or more generally five, flat, roundish, smooth, peltate, horizontal segments, on the inside of the bell, woolly. *Corol*, I could find no other than the peltate segments of the calyx. *Stamina* very uncertain, more frequently not found, when present very few, involved in wool. *Anthers* two-lobed. *Germ* pedicelled, woolly, three-celled, with one seed in each attached to the top of the axis. *Style* recurved. *Stigmas* bifid, with enlarged glandular heads. *Capsule* the size of a large pea, villous, hard, dark brown, three-lobed, three-celled, six-valved.

Seed solitary, ovate. *Integuments* two, the inner one a white membrane adhering to the exterior one. *Perisperm* and *embryo* as in the other *Euphorbiæ*.

8. E. *dichotoma*. *R.*

Somewhat shrubby, hairy. *Leaves* opposite, oval, serrate, three-nerved, hairy. *Flowers* in terminal and axillary heads, imbricated with hairy scariose bractes. *Corol* of four large obcordate, membranaceous petals.

Found by Dr. Hunter at Oojjein; it blossoms in October.

9. E. *cuneifolia*. *R.*

Shrubby, particularly near the root, erect. *Leaves* alternate, sessile, cuneiform, entire, smooth. *Umbel* trifid then bifid. *Involucres* oblong, involucels cordate. *Capsules* smooth.

Found by Colonel Hardwicke in the northern parts of Hindoostan; in flower in March.

10. E. *sessiliflora*. *R.*

Root tuberous. *Stem* simple, round, smooth. *Leaves* alternate, sessile, oblong, obtuse. *Flowers* axillary, sessile.

This pretty little species was brought from Pegue by the Rev. Mr. Felix Carey to this garden, where it blossoms freely during the month of February, at which time it is perfectly destitute of leaves; like the rest it is abundantly lactescent.

Root an irregularly shaped single tuber, about the size of a potatoe, in our small plants. *Stem* erect, simple, round, smooth, about a foot high. *Leaves* sessile, alternate, oblong, obtuse, smooth, entire, nearly veinless; about three inches long and about half as much broad, deciduous in the cold season, and appearing before the rains set in, when the plant has done flowering. *Stipules* a

minute glandular point on each side of the insertion of leaves. *Flowers* axillary, sessile, solitary, or paired with the rudiments of one or two more pressing on opposite sides of the fleshy base of the common calyx, and covered by an angular bracte. *Calyx* common, its mouth divided into five equal semilunar coloured segments. *Petals* five, red, equal, with the apex incurved and deeply cut into filiform segments. *Stamina* in five fascicles of five each. *Germ* oval. *Style* scarcely any. *Stigma* trifid.

11. E. *acaulis. R.*

Root tuberous, perennial, stemless, unarmed. *Leaves* radical, fleshy, sessile, cuneiform, smooth, with curled margins, crenulate, and callous, with a circular apex. *Peduncles* from the crown of the (now leafless) tuber, three, five, or seven-flowered.

A native of Bengal. From Poornea Mr. B. Smith sent me a plant to the Botanic garden at Calcutta, where it flowers in March, its leafless period, but has not yet produced ripe seeds. The leaves spread much and are deciduous about the end of the rains, and appear after the flowers have perished, in April and May. As in our East Indian armed *Euphorbias*, the flowers are compound, that is several male corollets surround the pistillum.

12. E. *hirta. Willd.* 2. 897.

Annual, hairy, oblique, with the apices recurved. *Leaves* opposite, obliquely oblong, serrulate. *Umbellets* axillary, peduncled, globular.

Beng. Bura keru.

Tithymalus botryoides. *Burm. zeyl.* 223. *t.* 104.

A common weed every where, and in flower and seed the whole year.

13. E. *parviflora. Willd.* 2. 898.

Annual, smooth, dichotomous, oblique. *Leaves* oppo-

site, obliquely-oblong, serrulate, smooth. *Flowers* interfoliaceous, many on a common peduncle, one on a proper peduncle of the same length. *Calyx* and *corol* unilateral, and each of four parts.

A native of various parts of India, and in flower nearly all the year.

14. E. *glauca. Willd.* 2. 916.

Erect, smooth. *Leaves* lanceolate, entire. *Umbel* quinquifid-trifid. *Involucres* linear-oblong, involucells ovate-cordate. Inside of the calyx woolly.

A native of Hindoostan.

15. E. *thymifolia. Willd.* 2. 898.

Branches pressing flat on the earth, coloured, hairy. *Leaves* opposite, obliquely ovate, serrate. *Flowers* axillary, crowded, short-peduncled. *Calyx* and *corol* of four semilateral parts each.

Beng. Swet-kerua.

A native of gravelly spots, and in flower most part of the year.

16. E. *uniflora. R.*

Annual, dichotomous, diffuse, filiform, smooth. *Leaves* somewhat linear, with the base obliquely cordate, and serrulate toward the apex. *Flowers* solitary. *Petals* with a large gland on the inside. *Capsules* smooth.

Common on dry barren spots, such as neglected gravel walks, &c. flowering all the year.

17. E. *chamaesyce. Willd.* 2. 999.

Root perennial. *Branches* spreading flat on the ground, smooth, and sub-dichotomous. *Leaves* opposite, obliquely-oblong, serrulate. *Flowers* axillary, solitary.

Beng. Chota-kerua.

A native of Coromandel and Bengal, on neglected gravel walks, &c.

18. E. *dracumculoides. Willd.* 2. 905.

Annual, erect, unarmed, ramous above the base. *Umbel* three or four-fid, dichotomous. *Involucres* and involucells linear, sessile, diverging, entire and smooth. *Petals* two-horned.

Beng. Chagul-putputi.

A native of Coromandel and Bengal. It flowers during the cold season. Differs from *exigua*, in being ramous up to the umbel; in having the leaves, involucres, and involucells; linear and spreading horizontally; and in the filaments being nearly cylindric.

19. E. *peltata. R.*

Annual, erect. *Leaves* and *involucres* ovate-lanceolate; *involucells* from oblong to cordate, serrulate. *Petals* peltate. *Capsule* round and smooth.

A native of the interior parts of the Coast of Coromandel; seeds brought from thence to the Company's Botanic garden at Calcutta, grew and have continued sowing themselves, and producing plants every cold season without care.

Stem annual, erect, ramous, round, smooth; the height of the whole plant a foot. *Branches* curved upwards. *Leaves* alternate, sessile, wedge-shaped, and lanceolate, finely serrate, very smooth. *Umbels* terminal, in six rays; the *partial* ones from four to two-cleft. *Involucres* like the leaves, only a little broader. *Involucells* from oblong to cordate, the nearer the apex the broader, all are smooth, and finely serrate. *Flowers* solitary, sessile, small, of a greenish yellow. *Petals* peltate. *Capsules* round, scarcely any angle to be seen, smooth in every part.

CLASS XII.

ICOSANDRIA MONOGYNIA.

CACTUS. Schreb. gen. n. 838.

Calyx **one-leaved, imbricated.** ***Corol*** **many petalled.** ***Berry*** **inferior, one-celled, many-seeded.**

1. C. *indicus. R.*

Joints proliferous, oblong, much compressed, thorns generally simple, long and straight, issuing from tufts of sharp bristles. ***Corol*** **yellow, twice as long as the stamens ;** ***exterior petal*** **obcordate.**

Tam. **Naga-kalee.**

Beng. **Nag-phunee.**

This plant is found here and there on road sides, in forests, and among bushes in the vicinity of Calcutta, and I am informed that it is equally common, not only over the whole of the province, but also on most of the adjoining districts ; so that, independent of its proper Bengalee name, and medicinal uses, there is every reason to imagine it is a native of these countries. Nor can I well reconcile it to any of the *opuntias* hitherto described; as will appear more evidently after reading the following description. It is in flower during the hot season, and more or less the whole year round.

Root **fibrous.** ***Trunk,*** **I have not yet seen any plant with any thing like one, (though I am informed it grows to be a perfect tree,) here it is a ramous bush, with tolerably erect joints ; these are proliferous, of an obovate-oblong form, and much compressed, thin, while young**

smooth, except in the axills of the leaves;* length and breadth various, according to soil and situation. *Leaves* scattered over the joints, small, sessile, subconical, fleshy, caducous. *Thorns* axillary, generally single, though sometimes in pairs, straight, from half an inch to two inches long, very strong, whitish, except the point, which is darker coloured, and very sharp; their insertions are surrounded with innumerable, slender, sharp, short bristles, which readily penetrate the skin, and give much trouble to the unwary handler. *Flowers* from the upper edges of the joints; sessile, large, of a bright beautiful yellow colour, opening only in the day. *Calyx* one-leafed, consisting of a leathery cup which fills exactly the umbilicus of the germ, deciduous with the corol, stamens and style in one body. *Petals* many, the exterior ones smaller, and obcordate; the interior ones oblong with somewhat ragged margins. *Stamens* not half the length of the petals. *Pistillum*, &c. as in the genus.

Upon this plant the Cochineal insects lately brought from America, thrive and multiply abundantly.

2. C. *chinensis. R.*

Subarboreous, joints compressed, proliferous, sublanceolar, almost unarmed. *Petals* retuse, truncate, longer than the stamina.

A native of China; from thence it was introduced into the Botanic garden at Calcutta about twenty years ago, during all that time it has blossomed only once.

FABRICIA.

Calyx five-cleft. *Petals* five, sessile. *Stigma* capitate. *Capsule* many-celled; *seeds* winged.

F. *bracteata. R.*

Leaves opposite, oblong, the floral ones minute and lan-

* I call the little caducous conical bodies over the joints leaves.

ceolate. *Flowers* solitary, with two bractes below the calyx.

A native of the Moluccas. It has the habit of a *Myrtus,* but from the *capsule* which is from eight to ten-celled, I conclude it is not of that family. The stamina are very numerous, the length of the oval petal. The stigma is truncate, not capitate. The floral leaves are so small, and the flowers so numerous toward the end of the branchlets, as to appear like a panicle.

METROSIDEROS. Schreb. gen. n. 791.

Calyx four or five-cleft, semisupera. *Petals* four or five. *Stamina* very long, standing out. *Stigma* simple. *Capsule* three or four-celled.

1. M. *vera. R.*

Leaves opposite, short-petioled, oblong, polished. *Corymbs* axillary, brachiate, shorter than the leaves. *Calyx* four-toothed.

Metrosideros vera. *Rumph. Amb.* 3. *t.* 7.

Rumphius describes it to be a tree of great size, growing in the forests of Amboyna, and the other Molucca Islands. It was introduced from the former place into the Botanic garden at Calcutta in 1801, and in July 1804, the largest plants blossomed for the first time, when only about seven feet high. It has a slender trunk, smooth bark, and few branches. No part of the tree, so far as I have yet observed, possesses any kind of fragrance.

Leaves opposite, short-petioled, oblong, firm, smooth, polished, perfectly entire, rather acute, with small and parallel *veins*, about six inches long, and from two to three broad. *Corymbs* axillary, solitary, shorter than the leaves, brachiate, bearing a few pretty large, pale greenish white inodorous flowers; pedicels flattened. *Bractes* oblong, or lanceolate, smooth, acute.

Calyx saucer-shaped, four, rarely five-toothed. *Petals* four, seldom five, sessile, round, expanding. *Filaments* from twenty to twenty-five, much longer than the petals of the same greenish yellow colour, and inserted with them into a rim round the inside of the calyx, at some distance from the four-lobed germ. *Anthers* ovate. *Germ* half above the bottom of the calyx; this part is evidently four-lobed, and a section thereof exposes four distinct cells, with numerous *ovula* in each, inserted on a projecting receptacle, which is longitudinally attached to the axis. *Style* rather longer than the stamens. *Stigma* simple, rather acute, with a perforation at the very point. *Capsule* nearly globular, the size of a pea, two-thirds above the calyx, four-celled, four-valved. *Seeds* numerous, angular.

2. M. *comosa. R.*

Leaves alternate, sessile, narrow-lanceolate, attenuated to both ends, mucronate, smooth, rigid, with the margins entire and thickened. *Flowers* lateral, crowded into a cylindrical trifid spike. *Calycine* segments semicircular and smooth, as are also the round subsessile petals. *Stigma* concave.

A native of the Moluccas.

3. M. *suberosa. R.*

Bark of even the young shoots cracked and corky. *Leaves* opposite, sessile, lanceolate, smooth. *Umbellets* lateral.

A native of the Moluccas.

Branchlets covered with deeply cracked corky bark. *Leaves* opposite, subsessile, broad-lanceolate, entire, taper, obtuse-pointed, firm and polished on both sides, from six to seven inches long and two broad. *Umbellets* from the old axills below the leaves, sessile. *Pedicels* clavate, smooth, one-flowered, which with the germ and ca-

lyx form a perfect imitation of a speaking trumpet. *Calyx* narrow-campanulate, obscurely four or five-toothed. *Petals* four or five, round, small, sessile. *Filaments* numerous, much larger than the petals. *Germ* three-celled. I have not found the ripe nor even full grown seed vessel. *Style* rather shorter than the filaments. *Stigma* acute.

4. M. *linearis. Smith. in Trans. Linn. Soc.* 3. *p.* 271.

Shrubby. *Leaves* scattered, linear, channelled, acute, rigid. *Flowers* crowded round the branchlets, a little below their trifid apices, some of them axillary.

This beautiful plant was reared in the Botanic garden at Calcutta, from seed sent by Colonel Patterson from New South Wales in 1800. In seven years the plants were six or eight feet high, stout and rigid. Flowering time in Bengal, April and May; the seeds require above a year to ripen.

Stem nearly erect, about as thick as a man's wrist. *Bark* dark-coloured, and rather scabrous. *Branches* few, scattered, stiff and straight; the ligneous parts ash-coloured, the tender ones downy. *Leaves* scattered, sessile, linear, rigid, channelled, from two to three inches long, and an eighth of an inch in breadth. *Flowers* crowded round the branchlets below the leaves of the same year, sessile, some of them are axillary, and in that case solitary. *Calyx* urceolate; *margin* five-cleft; *segments* reniform, deciduous. *Petals* five, greenish, nearly round, villous. *Filaments* inserted on a rim, (within the petals) round the mouth of the calyx, many times longer than the petals, of a bright crimson, and from their number, size, and length, giving that colour to the whole flower, though the petals and calyx are green. *Germ* more than semisupera, being attached to the bottom of the calyx only, round, hairy, generally three-celled, though I have found some with four, each containing numerous, very minute seeds attached to a large convex receptacle in the inner angle of the cell,

which is attached to the axis. *Style* as long as the stamina. *Stigma* simple. *Capsule* crowded round the branchlet, seminifera, inserted in the globular, firm, thick calyx, round, of the size of a grain of black pepper, hairy, particularly the vertex, thin, three-celled, three-valved. *Receptacles* as in the germ. *Seeds* numerous, filiform, brown.

Gærtner's figure of *Metrosideros armillaris, vol.* 1. 6. 34. *f.* 5. is so exactly like this, that it may well serve to be quoted for it.

PSIDIUM. Schreb. gen. n. 841.

Calyx five-cleft. *Corol* five-petioled. *Germ* inferior, four-celled. *Berry* one-celled, many-seeded.

1. P. *pyriferum. Willd.* 2. 957.

Fruit turbinate.

Eng. White Guava; however the colour of the inside of the fruit varies much.

Pela. *Rheed. Mal.* 3. *t.* 34.

Hind. Soopari-am, pronounced Sufriam.

Beng. Peyara.

2. P. *pomiferum. Willd.* 2. 958.

Fruit spherical.

Eng. Red Guava, but like the other, the colour of the inside varies much.

Malacka-pela. *Rheed. Mal.* 3. *t.* 35.

Hind. Lal-sufriam.

These two kinds of Guava are very generally cultivated in the warmer parts of America.

CARALLIA. R.

Calyx six or seven cleft. *Corol* six or seven-petioled, unguiculate. *Stigma* plate-lobate. *Germ* inferior, one-

celled, one-seeded, attachment superior. *Berry* one or two-seeded.

1. C. *lucida. R. Ind. pl.* 3. *n.* 211.

Leaves opposite, oblong, serrulate. *Peduncles* many-flowered.

Teling. Karalli.

This is a small handsome tree, a native of the lower region of the Circar mountains, and of Chittagong. Flowering time March. Leaves not deciduous.

Leaves opposite, short petioled, oval-pointed, delicately serrate, smooth and shining on both sides; four or five inches long and from two to two and a half broad. *Stipules* interfoliaceous, pointed. *Umbellets* axillary, small, rigid, few-flowered, generally three-cleft. *Calyx* above, six or seven parted; *divisions* acute, erect, permanent. *Corol* six or seven-petalled, orbicular, scolloped, waved, inserted into the divisions of the calyx by short claws. *Filaments* twelve or fourteen, of the length of the corol, inserted into the calyx. *Anthers* oblong, erect. *Germ* inferior, globular, one-celled, containing one, two, or three seeds, attached to the top of the cell. *Style* the length of the filaments. *Stigma* three-lobed. *Berry* globular, smooth, pulpy, of the size of a large pea, one-celled. *Seed* one, rarely two, uniform.

2. C. *lanceæfolia. R.*

Leaves lanceolar, acutely-serrulate, waved, shining. *Peduncles* many-flowered.

Engeet-darray is the Malay name on the West coast of Sumatra, where the tree is indigenous; from thence it was introduced into the Botanic garden at Calcutta, where in ten years it has attained the height of twenty-five feet, with a very straight *trunk* as in the firs; decorated with numerous, expanding, opposite *branches* and *branchlets.*

Bark of the old ligneous parts, smooth and brown, of the tender shoots smooth and green.

It is a very perfect ever green, and the foliage uncommonly dark.

Leaves opposite, short-petioled, lanceolar, sharply serrulate at the margin, having the upper surface of a clear, shining deep green, and the under one paler, with the apex rather obtuse, from three to six inches long, and from one to two broad. *Stipules* large, linear, sheathing, caducous. *Peduncles* axillary, or where the last year's leaves grew, opposite, rigid, thick and short, generally twice bifid with about three or four sessile, small greenish white flowers on the apex of each division. *Bractes* small, subannular. *Calyx* superior, from six to seven-toothed; *segments* triangular and acute. *Petals* six or seven, inserted by short claws into the calyx immediately under its fissures, sub-reniform, with the margins much curled, and laterally incurved, embracing the middle part of the larger filaments. *Filaments* from twelve to fourteen, inserted into the calyx, alternately shorter, and incurved. *Anthers* incumbent. *Germ* sub-inferior, with a large turbinate crown rising in the centre like the true germ itself, as if the calyx were inferior, this crown is embraced by a yellow crenate ring, which may be called a *nectary*; the germ is five-celled with two *ovula* in each cell attached to the middle of the axis. *Style* nearly as long as the corol. *Stigma* peltate, five-lobed.

EUGENIA. Schreb. gen. n. 842.

Calyx entire, or four-parted. *Corol* four-petalled. *Germ* inferior, two-celled; cells many-seeded; attachment interior. *Berry* one or more seeded. *Embryo* without perisperm.

1. E. *malaccensis. Willd.* 2. 959.

Trunk straight. *Leaves* from oblong to lanceolar. *Flowers* in sessile, lateral fascicles. *Berries* turbinate.

Jambosa domestica. *Rumph. Amb.* 1. *t.* 37.

Nati-schambu. *Rheed. Mal.* 1. *t.* 18.

Beng. Malacca Jamrool.

A native of the Malay Islands, &c. In Bengal it blossoms and bears fruit at different periods of the year.

There is a variety with dark blood red fruit, which is probably *Rumphius's Jambosa nigra,* 1. *p.* 125. *t.* 38. *f.* 1.

The fruit is large, juicy and beautiful and very generally eaten, though rather insipid.

2. E. *purpurea. R.*

Trunk straight. *Leaves* smooth. *Flowers* in lateral sessile fascicles as in the last. *Berries* oval.

It differs from E. *Malaccensis* in the shape of the fruit only, a native of the Malay Islands, flowering in the hot season ; the fruit is as large as that of the former species; the colour a very dark purple.

3. E. *amplexicaulis. R.*

Leaves stem-clasping, oblong, obtuse ; *peduncles* lateral, three or nine-flowered. *Berries* spherical.

A stately tree, a native of Chittagong, a country still abounding in numerous undetermined new species of this noble genus. In the Botanic garden at Calcutta it is in flower and fruit at different periods through the year.

Trunk tolerably straight, quickly dividing into numerous spreading branches, forming a large extensive, dense head. *Bark* of the old woody parts brown, but pretty smooth; that of the *young shoots* polished, of a clear green. *Leaves* opposite, stem-clasping, oblong, entire ; with a rounded apex, firm and glossy, from six to eight inches

long, and from three to four broad. *Peduncles* lateral, short, three-flowered, trifid ; each division three-flowered. *Flowers* large, white, inodorous. *Calyx* four-parted ; the opposite segments unequal. *Petals* four, nearly round. *Stamina* numerous, &c. as in the genus. *Germ* turbinate, two-celled, with several *ovula* attached to the thickened middle of the partition. *Style* about as long as the stamina. *Stigma* acute. *Berry* round, the size of a small apple, greenish yellow when ripe. *Pulp* of a soft, rather spongy texture, and sweet insipid taste, rarely more than one-celled, containing one or two large, oval, more or less compressed seeds, covered with a soft white integument, the abortive cell, and its contents are very evident in the ripe fruit of this species. *Perisperm* none. *Embryo* conform to the seed. *Cotyledons* of a thick, firm, fleshy texture, and nearly equal. *Radicle* generally near the middle of the cotyledons.

The cultivation of this species cannot well be recommended, on account of its fruit ; but the tree is one of the most handsome of the genus.

4. E. *Jambolana. Lamarck. Encycl.* 3. 150.

Leaves oblong, entire, sub-acuminate. *Panicles* below the leaves. *Calyx* entire. *Berry* oblong, and often obliquely so.

Calyptranthes *Jambolana. Linn. sp. pl. ed. Willd.* 2. 975.

Perin-njara. *Rheed.* 5. *t.* 29.

Jumboo, Jumboo, Sanscrit names.

Beng. Kalla-jam.

Teling. Nasedoo.

This grows to be a large tree, is common every where, both in its wild and cultivated states ; every soil and situation suiting it equally well. Flowering time the beginning of the hot season. The fruit ripens in July and August.

Trunk generally a little crooked. *Bark* whitish with a few cracks. *Branches* the larger irregular, the smaller depending; the whole forming a very large, beautiful, shady head. *Leaves* opposite, short-petioled, oblong, pointed, waved, smooth, shining, firm, from four to five inches long, and two broad. *Stipules* none. *Panicles* often opposite on the naked *branchlets*, just below the leaves, middle-sized, globular, cross-armed, rigid, and subdivided by them. *Calyx* cup-form, with the *margin* entire, permanent. *Petals* four, orbicular, claws very short, inserted into the mouth of the corol. *Anthers* small. *Germ* inferior. *Style* rather shorter than the stamens, declining. *Stigma* acute. *Berry* roundish, about the size of a large cherry, succulent, smooth, when ripe black. *Seed* one, roundish, smooth.

The wood of this tree is hard, close grained, and durable; it is of course used for various purposes.

The bark is strongly astringent, and dyes excellent durable browns of various shades according to the corrosive employed, or the strength of the decoction.

The fruits are universally eaten when ripe, by man and birds; they are of a subacid, astringent taste.

There is a variety of the fruit in the northern and mountainous parts of the coast of a superior quality, and as large as a pigeon's egg.

5. C. *obtusifolia. R.*

Leaves elliptic, obtuse, polished; *panicles* below the leaves. *Corol* calyptrate. *Berry* oblong, one-seeded.

Jambolifera *pedunculata. Gært. sem.* 1. 178. *t.* 36.

Jambolana. *Rumph. Amb.* 1. *t.* 42.

A tree of considerable size, a native of the Moluccas. In the Botanic garden at Calcutta, where it has been about twelve years, it blossoms in March, and the fruit ripens in June. It differs from E. *Jambolana* of the conti-

nent of India, only in the leaves being obtuse, and frequently emarginate, as in Rumphius's figure.

Jambosa Ceramica. Rumph. Amb. 1. *t.* 41. seems a species still undescribed, except by Rumphius, which I have not yet met with.

6. E. *operculata. R.*

Trunk short, thin of branches. *Leaves* short-petioled, oblong, smooth, coarsely veined. *Panicles* lateral, brachiate, collecting the flowers in sessile, terminal heads. *Calyx* entire; corol operculate. *Berries* spherical.

From Amboyna this tree was brought to the Botanic garden at Calcutta, where it blossoms in March and April, and the seeds ripen in May and June.

7. E. *caryophylifolia. Lamarck.*

Leaves oblong-lanceolate. *Panicles* below the leaves, cross-armed. *Calyx* obtusely four-toothed. *Corol* four-petioled, deciduous without expanding. *Berry* globular.

Calyptranthes *Caryophyllifolia, Linn. sp. pl. ed. Willd.* 2. 975.

Myrtus *Cuminum. Linn. sp. pl.* 674.

Jambosa *Ceramica. Rumph. Amb.* 1. *t.* 41.

Beng. Chota Jamb.

A native of various parts of India, growing luxuriantly in almost every soil, and situation. Flowering time the hot season.

Trunk seldom straight, nor long, but thick, and covered, as well as the numerous spreading branches, with smooth ash-coloured *bark*, the smaller branches, and twigs are generally pendulous. *Leaves* opposite, petioled, nodding, oblong-lanceolate, waved, very smooth, and shining on both sides, with numerous, most slender, parallel-ed veins; from three to four inches long, and about two broad. *Petioles* about an inch long, channelled. *Pani-*

cles diverging from the naked branchlets below the leaves, cross-armed, rigid. *Flowers* numerous, small. *Calyx* cup-shaped, obscurely four-toothed. *Corol, petals* four or five, orbicular, concave, sessile, they seldom or never expand, but are pushed off by the stamens in one cup-shaped body like the calyptra in mosses. *Stamens* numerous. *Berry* round, but in general disfigured, by depressions or pits, size of a large pea, when ripe black.

Observation. This tree comes exceedingly near my *Eugenia Jambolana,* but when found growing together, it is evidently different. I considered them as one, or at most as varieties of one species, until I met with them both together in this garden, and, have now raised plants from the seeds of each, and they continue distinct. The best distinguishing marks are stated in the definition; besides, the *leaves* and *fruit* of *Jambolana* are much larger in the same soil; particularly the *fruit,* and also uniformly of an oblong shape.

Perin Njara. Rheed. Mal. vol. 5. *t.* 29. is evidently the last mentioned.

The wood is whitish, very strong, close grained, hard and durable. The fruit scarcely eatable, whereas many reckon that of *Jambolana* good, particularly if soaked in a little salt and water for about an hour, which removes a great part of their superabundant astringency.

8. E. *fruticosa. R.*

Shrubby. *Leaves* from broad-oblong to oval, finely veined. *Panicles* lateral. *Flowers* numerous. *Calyx* entire. *Peduncles* and *pedicells* square. *Corol* four-petioled, but generally deciduous, in form of a lid.

Hind. and *Beng.* Bun-Jamb.

A large shrub or small tree, a native of Chittagong. It flowers during the hot season, and its very small one-seeded berries ripen early in the rainy season.

9. E. *brachiate. R.*

Arboreous. *Leaves* elliptic, obtuse-pointed. *Panicles* lateral. *Peduncles* and *pedicells* four-seeded. *Calyx* entire. *Berries* spherical.

A native of Amboyna. In the Botanic garden at Calcutta it blossoms in May, and the fruit ripens in July; they are about the size of pease, dark purple or black, and of an astringent taste. It is nearly allied to *fruticosa*, but grows to a much greater size; the leaves are broader and more obtuse, and in the same garden it has taken eleven years from the seed to blossom, while fruticosa requires only three or four.

10. E. *claviflora. R.*

Leaves lanceolar. *Corymbs* lateral, subsessile, umbelliform; *flowers* clavate. *Berries* long, ovate, crowned with the cyathiform base of the calyx.

Lumba-nuli-jamb the vernacular name in Chittagong, where it is indigenous, and grows to be a stout useful timber tree, of very considerable size. Flowering time February and March, and the fruit which is eaten by the natives, ripens in May.

11. E. *cerasoides. R.*

Leaves short-petioled, from oval to oblong, remotely coarse-veined. *Panicles* lateral, brachiate. *Fruit* round, of the size and appearance of small black cherries.

Botee Jam, the vernacular name in Chittagong, where it is indigenous. Its trunk is so large as to furnish planks for various purposes. Flowering time April and May, and the fruit, which is very generally eaten, ripens in July.

12. E. *præcox. R.*

Leaves opposite, petioled, lanceolar, rather obtuse, coarsely veined. *Panicles* lateral and axillary, brachiate half the length of the leaves.

A stout tree, a native of the hilly parts of the province of Chittagong, where it blossoms so early as January.

13. E. *Paniala. R.*

Leaves broad-lanceolar, acuminate, coarsely veined. *Panicles* lateral, brachiate, flowers in little heads. *Berries* oval.

Beng. Panial*a*-jamb.

It is one of the largest and most robust trees of this very noble genus; a native of the forests of Chittagong, where they abound more than in any other country I am acquainted with, and furnish the natives with timber of a large size, fit for a variety of purposes. Flowering time the month of April, the fruit ripening in June; they are about the size of a small gooseberry and very juicy.

14. E. *laurifolia. R.*

Leaves subsessile, oblong, glossy, obtusely acuminate. *Peduncles* lateral, three-flowered; *pedicells* clavate, length of the peduncles. *Berries* oblong.

A beautiful, densely ramous, small tree, flowering in the hot season and ripening its fruit during the rains, like many of the other uncultivated species, the pulp of the fruit is in small quantity, and scarce eatable; the shape however of the berries in this species, together with its dark brown bark, immediately point it out.

14. E. *ternifolia. R.*

Leaves tern, sessile, oblong. *Flowers* lateral.

A large tree, a native of Chittagong, where it blossoms in April, and the fruit ripens in June and July: it is eaten by the natives.

Of this beautiful, stately species, there are two varieties, one with white flowers, called by the people where the tree grows Phool jamb, the other with lovely rosy

flowers they call Lal-phool-jamb. Their leaves are amongst the largest of the genus being from six to fifteen inches long, and from three to six broad.

15. E. *angustifolia. R.*

Leaves tern, linear-lanceolar. *Peduncles* lateral, from three to four-flowered. *Corol* many petalled.

A small tree, a native of Chittagong, where it flowers in March and April. The fruit ripens in June and July.

It is readily known by its many-petalled corol, having from twelve to sixteen petals, and by its three-fold leaves.

16. E. *Zeylanica. Willd.* 2. 963.

Arboreous. *Leaves* short-petioled, oblong, obtusely acuminate, lucid, veinless, when young villous. *Peduncles* axillary, generally solitary, or crowded on little comose racemes.

A native of the Silhet District, where it is called *Nagasun Jamb*, and grows to be a tree of a middling size, flowering in April.

17. E. *myrtifolia. R.*

Shrubby. *Leaves* lanceolate, taper, obtusely pointed, lucid. *Peduncles* axillary, compound, many-flowered. *Berries* spherical.

A beautiful small tree or large shrub, a native of Sumatra, from whence it was sent by Dr. C. Campbell to the Botanic garden at Calcutta, where in nine years the plants from seed had attained the height of six or seven feet, when they began to blossom in March and April, and the seed ripened in May and June.

18. E. *bracteata. R.*

Shrubby. *Leaves* oblong, ventricose, obtuse, lucid. *Peduncles* axillary, one, rarely two or three, one flowered. *Involucre* two-leaved. *Berries* spherical, smooth.

Myrtus *Coromandeliana. Kön. Mss.*
Myrtus *bracteata. Willd.* 2. 969.
Teling. Gorag-moodee.
Hind. and *Beng.* Hijulee Mendee.

It grows in great abundance on the sand hills near to the sea on the coast of Coromandel.

19. E. *polygama. R.*

Polygamous. *Leaves* short-petioled, elliptic, cuspidate. *Panicles* axillary on some trees, and not on others, villous. *Stigma* capitate.

A native of the Malay Archipelago. I have not seen the pericarp, its genus is therefore uncertain, particularly as it has a capitate stigma.

20. E. *venusta. R.*

Arboreous, with numerous drooping branchlets. *Leaves* broad-lanceolar, obtusely acuminate. *Panicles* axillary and terminal, brachiate, shorter than the leaves, ultimate divisions three-flowered.

From Tippera, where this elegant tree is indigenous, the seeds were received into this garden, where in six years the largest of the young trees was about twelve feet high, clothed with innumerable slender, drooping branches down to the ground. *Bark* of the woody parts dark brown and smooth, of the tender shoots green and smooth. *Leaves* opposite, short petioled, from lanceolar to oblong; when the plants were younger they were much narrower in proportion to their length, entire, firm, highly polished, obtusely acuminate; from three to four inches long, and one and a half broad. *Panicles* axillary, more rarely terminal, shorter than the leaves, composed of brachiate pairs of branches with their ultimate divisions three-flowered, all round and smooth. *Flowers* like those of the common myrtle, and about the same size. *Calyx* four-toothed. *Corol* of four short-clawed, orbicu-

lar, concave, reddish petals. *Germ* two-celled, with many *ovula* in each, &c.

21. E. *acuminata. R.*

Leaves broad-lanceolar, acuminate, polished, finely veined. *Peduncles* axillary, terminal, many-flowered. *Corol* operculate. *Berries* round.

A small, but tall, handsome tree, a native of the Moluccas; in the Botanic garden at Calcutta it flowers in March, and the fruit ripens in June.

22. E. *cymosa. R.*

Arboreous. *Leaves* oblong, polished, hard. *Cymes* terminal and axillary, crowded.

Buttee Jamb, the vernacular name in Silhet where the tree is indigenous; it grows to a great size, and the wood is used for various economical purposes. Flowering time December.

23. E. *aquea. R.*

Arboreous, trunk soon divided. *Leaves* opposite, sessile, oblong-lanceolate, entire. *Peduncles* terminal, and from the exterior axills, many-flowered. *Fruit* flattened at both ends, (turnip-shaped.)

Jambosa *aquea. Rumph. Amb.* 1. *p.* 126. *t.* 38. *f.* 2. the rose-coloured variety, and Jambo-ayer. *Rumph. Amb.* 1. *p.* 126. the white.

Both the above varieties have been introduced from the Moluccas into the Botanic garden at Calcutta, where they thrive luxuriantly, and blossom during the month of March, the fruit ripens in May and June.

Trunk short; *branches* numerous down to the ground. *Bark* smooth, ash-coloured; whole height from twenty to twenty-five feet. *Leaves* opposite, very short-petioled, sublanceolate, with their narrow base somewhat cordate; *margins* entire, smooth on both sides. *Pe-*

duncles terminal, and from three to five or seven large, white flowers, on pedicels of various length. *Calyx* the four segments of the border subreniform. *Petals* subrotund, rather larger than the divisions of the calyx. *Filaments* numerous, twice the length of the petals. *Anthers* small, oblong. *Germ* broad-turbinate, two-celled, with the rudiments of many seeds in each. *Style* longer than the stamina. *Stigma* acute. *Fruit* about the size of a large *Medlar*, somewhat turbinate, with both ends much flattened ; surface smooth and polished, but uneven, and in the first noticed variety of a most beautiful lively pale rose colour, and aromatic taste, containing from one to four seeds, though in the germ, as in all the other species I have examined, there are the rudiments of a great many. The other variety, *Jambo ayer*, has the fruit perfectly white, there is no other difference.

The tree which bears the rose, or pink coloured variety, is conspicuously beautiful, when the drooping branches of the full grown, brilliant coloured fruit, appear through the dark deep green leaves.

24. E. *alba*. *R.*

Trunk rarely straight, and soon divided. *Leaves* subsessile, oblong. *Pedunc!es* lateral and terminal, brachiate, many flowered. *Flowers* pedicelled. *Berries* depressed, turbinate.

Beng. Jamrool.

A native of the Malay Islands. In the Botanic garden at Calcutta, this rather low, very ramous tree blossoms, and bears immense crops of large pure white shining fruit during the hot and rainy seasons, but they are very insipid, and quite watery.

25. E. *oblata*. *R.*

Leaves opposite, broad lanceoiar, obtusely-acuminate. *Panicles* terminal, with smaller axillary corymbiform fas-

cicles in the axills, all shorter than the leaves. *Berries* transversely oval.

Goolum, the vernacular name in Chittagong, where it is found wild, as well as cultivated for its edible fruit; the wood is also in some estimation. It blossoms in March, and the fruit ripens in June and July.

26. E. *lanceæfolia. R.*

Leaves short petioled, lanceolate, with the base rounded, acuminate, smooth. *Panicles* axillary and terminal, globular, shorter than the leaves. *Berries* oblong, crowned with the entire calyx.

Poora-Jamb, the vernacular name in Silhet, where it is indigenous in the forests of that district, and grows to be one of the largest trees. Flowering time November, and the seed ripens in February; uncommon periods for an *Eugenia* to flower and ripen its fruit; this I am inclined to consider one of the most elegant and most useful species of this extensive, and truly superb genus.

27. E. *lanceolaria. R.*

Leaves short-petioled, narrow-lanceolar. *Flowers* terminal, about fifteen, corymbose-fascicled. *Berries* irregularly round lobate.

Pounee-Jamb, the vernacular name in Silhet, where it grows to be a small smooth tree of from ten to twelve feet in height, the flowers very large, rosy, and somewhat fragrant, which with the elegant foliage, renders it one of the prettiest of this very grand family. It flowers in May, the fruit ripens in December, and, though as large as a small apple, is not eaten, the pulp being in small quantity and tough.

28. E. *Jambos. Willd.* 2. 959.

Trunk rarely straight and soon dividing. *Leaves* lanceolate. *Flowers* terminal. *Berries* globular.

Malacca schambu. *Rheed. Mal.* 1. *t.* 17.
Jambosa sylvestris alba. *Rumph. Amb.* 1. *t.* 39.
Jamb*a* the Sanscrit name. *Asiat. Res.* 1. 419.
Beng. Gulab-jamb.

Found common in gardens in most parts of India and its Islands.

29. E. *caryophyllata. Willd.* 2. 965.

Leaves from lanceolar to oblong, acute. *Corymbs* terminal. *Berries* oblong, one, rarely, two-seeded.

Luvunga, the Sanscrit name.

Pers. Meykuk.

English. Clove tree.

On the Molucca Islands where these trees are indigenous they begin to blossom when about nine years old; the average produce is about two, or two and a half pounds of cloves yearly.

Arab. Kerunpul.

Beng. Lung.

Caryophyllus *aromaticus. sp. pl.* 735. *Gært. sem. t.* 167. 33.

Caryophyllus. *Rumph. Amb.* 2. *t.* 1. 2. 3.

30. E. *leptosperuma. R.*

Leaves short petioled, lanceolate, coriaceous, polished. *Panicles* terminal, very ramous. *Calyx* acetabuliform, obscurely five-toothed. *Stigma* two-toothed.

A native of the Island of Romoa.

31. E. *Thumra. R.*

Leaves lanceolar, polished. *Panicles* terminal, extreme, remote, many-flowered. Divisions of the calyx subrotund; *petals* reniform, sessile.

Sent from Pegue by the Rev. Mr. F. Carey, under the vernacular name *Thumra.*

32. E. *pulchella. R.*

Leaves broad-lanceolar, acuminate, finely veined, lucid. *Panicles* terminal, divided in a triternate form; *peduncles* and *pedicells* four-seeded. *Berries* spherical.

A very beautiful, slow growing, small tree; a native of the Molucca Islands. Flowering time in the Botanic garden of Calcutta March and April, and the fruit which is like the black currant, ripens in the early part of the rains.

33. E. *Inophylla. R.*

Trunk straight to the top of the tree. *Leaves* from oval to oblong, finely-veined and polished. *Panicles* terminal, corymbiform. *Calyx* obscurely from four to five-lobed. *Corol* from four to five-petalled. *Berries* turbinate.

A native of the Moluccas. It flowers during the hot season in the Botanic garden at Calcutta.

Although it resembles the clove tree, it possesses no kind of fragrance. The large pear-shaped berries are not eatable, the pulpy part or rather cortex being of a hard tough texture and unpleasant taste.

34. E. *rubens. R.*

Leaves short-petioled, opposite, and subalternate, lanceolar, obtuse, fine-veined, hard and glossy. *Panicles* terminal, ultimate divisions often umbelliferous.

A large timber tree, a native of the extensive forests of Chittagong, where it is called *Kuree* Jamb. It flowers in April; the fruit which is eaten by boys, ripens about the beginning of the rains.

35. E. *glandulifera. R.*

Shrubby. *Leaves* broad-lanceolate, highly polished. *Panicles* terminal, brachiate; ramifications simple and

umbelliferous. *Calyx* five-toothed, and with the germs and pedicells glandular.

A native of Sumatra.

36. E. *macrocarpa. R.*

Leaves subsessile, lanceolate, acuminate, base narrow-cordate. *Peduncles* terminal, few-flowered. *Berries* spherical, of the size of a large orange, crowned with the four-lobed permanent calyx.

Chalta-jamb, the vernacular name in Chittagong, where it is indigenous in the forests amongst the timber trees. Flowering in April, and the immensely large fruit, resembling that of the Chalta, *(Dillenia indica* now called *speciosa,)* which is eaten by the natives, ripens in August and September.

37. E. *corymbosa. R.*

Leaves ovate-lanceolate, entire, smooth. *Corymbs* terminal, decompound. *Calyx* with large round divisions. *Berries* globular.

A native of the Moluccas.

MYRTUS. Schreb. gen. n. 844.

Calyx five-cleft; *petals* five. *Berry* inferior, from two to five-celled, with a few gibbous seeds in each.

1. M. *communis. Willd.* 2. 967.

Flowers sub-solitary. *Involucre* two-leaved.

Arab. Isbor.

Hind. Belatee mendee.

Common in gardens, it flowers during the cold season. I am not certain that this species is found indigenous in any part of India.

2. M. *tomentosa. Willd.* 2. 960.

Shrubby. *Leaves* short-petioled, oblong, three-nerved, hoary underneath. *Peduncles* axillary, one-flowered. *Bractes* two at the bottom of the germ. *Berry* oval, cells uncertain; *seeds* very numerous.

3. M. *canescens. Lour. Cochin Ch.* 381.

Arbor sinensis, &c. *Pluk. am. p.* 21. *t.* 372. *f.* 1. is good.

A native of the Island of Pulo Penang, as well as of China, Cochin China, &c.

EUCALYPTUS. L'Herit.

Calyx permanent truncated, before flowering covered with an entire deciduous lid. *Corol* none. *Capsule* inferior, four-celled, opening at top, many-seeded.

E. *moluccana. R.*

Lid conical, shorter than the calyx. *Panicles* lateral, composed of peduncled heads, of six or seven flowers. *Leaves* alternate, petioled, lanceolate, entire, firm and polished.

A native of the Molucca Islands, differing from all the species described by Dr. Smith in the 3*d vol. of the Transactions of the Linnæan Society*, in having lateral panicles, composed of heads of six or seven sessile flowers.

FŒTIDIA. Juss.

Calyx superior, four-parted. *Corol. Drupe* turbinate. *Nut* ligneous, four-celled. *Seeds* one or two.

F. *mauritiana. Willd.* 2. 980. *Lamarck. Juss. &c.*

Found by Colonel Hardwicke indigenous on the Mau-

ritius, in seed in the month of July. He says it is a tall, stout tree.

Stem smooth and straight, thirty feet without branches. *Branches* diverging. The *bark* very tenacious, thick, entire; surface whitish, red within, bitter and astringent. The wood-cutters strip young shoots of the bark to bundle up their wood. *Leaves* about the ends of the branches on all sides, crowded, lanceolar, entire, smooth, with mid-rib red, sessile.

PUNICA. Schreb. gen. n. 847.

Calyx five-cleft. *Petals* five. *Pome* inferior, many-celled, many-seeded.

P. *granatum. Willd.* 2. 981. *Asiat. Res.* xi. 175.
Arboreous. *Leaves* lanceolate.
Arab. Rana, or Ruman.
Pers. Anar.
Hind. Darim, also Anar.
Sung. Darimba.
Beng. Dalim, or Darim.

Gool-anar is the Hindee name of the double flowered variety; both are common in gardens throughout India.

A decoction of the bark of the root, has been found a sovereign remedy for the *Tænia*, or *Tape-worm*. For the knowledge of this valuable discovery, we are indebted to Mr. Alexander Colvin, and Mr. Home of Calcutta. See Dr. Fleming's Account thereof in the 11th vol. of the *Asiat. Res.* above quoted.

AMYGDALUS. Schreb. gen. n. 848.

Calyx five-cleft. *Petals* five. *Drupe* superior, having a shell perforated with pores.

1. A. *persica. Willd.* 2. 982.

All the serratures of the leaves acute. *Flowers* sessile, and solitary.

Arab. Tuffa-parsee.

Pers. Shooft-aloo.

Chin. To is the name of the common peach, and pinto of the flat peach.

Several varieties from China and Persia have been introduced into the gardens of India. The most uncommon is the flat peach from China, its fruit is vertically compressed, like a turnip. In Bengal they blossom in February and the fruit ripens in May.

2. A. *communis. Willd.* 2. 982.

Lower serratures of the leaves glandular. *Flowers* sessile and in pairs.

Arab. and *Hind.* Budam.

Common in Persia and Arabia I therefore conclude it is a native of those countries. It does not succeed in India, requiring much nursing to keep it alive.

3. A. *cordifolia. R.*

Leaves cordate, acuminate, gland-serrulate. *Flowers* in pairs, peduncled. *Nut* hairy.

A native of China, and now common in gardens about Calcutta, where it grows to be a large very ramous tree, and is cultivated for its small, yellow, succulent, acid fruit, of which tarts are often made. Flowering time in Bengal the cool season, the fruit ripens in the hot season.

PRUNUS. Schreb. gen. n. 849.

Calyx five-cleft. *Petals* five. *Drupe* superior, with the nut having prominent sutures.

1. P. *cerasus. Willd.* 2. 991.

Umbels sub-peduncled. *Leaves* ovate-lanceolate, smooth, folded together.

Arab. Kerasya, or Jerasya.

Pers. Aloo-baloo.

A native of Persia, &c.

2. P. *armeniaca. Willd.* 2. 989.

Flowers sessile. *Leaves* subcordate.

Hind. Khoo-banee.

Arab. Bin-kook, also Tuffa-urmena.

Pers. Mishmish.

A native of China, as well as the west of Asia.

3. P. *silvatica. R.*

Peduncles short, few-flowered. *Leaves* oblong, cuspidate, finely-serrate, polished, having two glands at the base. *Bractes* ovate, sessile, pectinato-serrate.

Prunus, Hardwicke in Asiat. Res. 6. 362.

Found wild by Colonel Hardwicke, and afterwards by Mr. Francis Pierard; a tree of considerable size on the mountains north of Hurdwar.

4. P. *trifolia. R.*

Unarmed. *Peduncles* tern. *Leaves* oblong, very finely gland-serrate, smooth, in the bud equitant. *Drupes* cordate.

Chin. Hong-sum-li.

This elegant very ramous bushy shrub has been received from China, into our gardens in Bengal, where it blossoms in February, immediately after which the luxuriant foliage expands, and the fruit, which is about the size of the common plum, and nearly as palatable, ripens in May and June.

Trunk in our young cultivated trees, or rather shrubs, very short, soon dividing into numerous *branches* and

branchlets in all directions from diverging to erect. ***Bark*** on all smooth. ***Leaves*** alternate, in the bud equitant, petioled, recurved, oblong, tapering equally at each end, very finely gland-serrate, considerably acuminate, smooth, from two to four inches long, and from one to two broad, in Bengal deciduous about the close of the year. ***Stipules*** from the base of the petioles, ensiform, gland-ciliate. ***Flowers*** very numerous, rather small, and white, short peduncled, regularly three from each bud, and there are generally two of those buds in each of the old axills, with a leaf-bearing one in the centre. ***Bractes***, the scales of the bud, cordate, scariose, and nearly caducous. ***Calyx, segments*** five, oblong; ***margins*** glandular. ***Petals*** oval, short-clawed, the length of the peduncles. ***Filaments*** about thirty, shorter than the petals. ***Germ*** ovate, one-celled, containing two ***ovula*** attached to the same side of the cell. ***Style*** the length of the stamina. ***Stigma*** large. ***Drupe*** cordate, with an obtuse rising at the apex, the size of the common plum, and of the same purple colour, covered with a similar bloom, grooved on one side. ***Pulp*** in large quantity, of a pale reddish yellow. ***Seed*** single, conform to the nut. ***Integument*** single. ***Perisperm*** a thin covering on one side only. ***Embryo*** inverse. ***Cotyledons*** unequal, the small one doubled, and embraced by the larger, subequitant.

ALANGIUM. Juss.

Calyx from six to seven-toothed. ***Corol*** from six to seven-petalled. ***Germ*** inferior, one-celled, one-seeded, attachment superior. ***Drupe*** one-seeded. ***Embryo*** inverse, furnished with a perisperm.

A. ***hexapetalum. Willd.*** 2. 1174.

Arboreous, with the ***branchlets*** sometimes ending in

spines sometimes not. *Leaves* lanceolate. *Corol* from six to seven-petalled.

Greevia *salvifolia. Linn. suppl.* 409.

Greevia *montana. Kon. Mss.*

Angolam. *Rheed. Mal.* 4. *t.* 17. and Kara-angolam *t.* 26 are, I strongly suspect, at most but varieties of the same species.

Beng. Akar-kanta.

A native of Coromandel, Malabar and Bengal. It flowers during the hot season. The germ has one cell, and contains a single *ovula* attached to the top of the cell. The embryo is inverse and furnished with a perisperm. The wood beautiful.

LAGERSTROEMIA. Schreb. gen. n. 910.

Calyx six-toothed. *Petals* six, inserted by claws, and curled. *Germ* from three to six-celled; cells many-seeded, attachment central. *Capsule* superior, from three to six-celled, from three to six-valved. *Seeds* several, winged. *Embryo*, with centripetal radicle, and little or no perisperm.

1. *L. grandiflora. R.*

Arboreous. *Leaves* opposite, oblong, with an enlarged cordate base. *Panicles* terminal, drooping. *Stamina* equal, longer than the corol. *Calyx* smooth. *Capsules* six or more-celled. *Seeds* filiform.

A native of Chittagong, and the neighbouring districts. In the Botanic garden at Calcutta it was reared from seed in 1801; and when seven years old, the trees were large; it blossoms during the dry season; and the seeds ripen from April to June.

Trunk perfectly erect and straight to the top of the trees. *Bark* smooth, ash-coloured. *Branches* subverticellate, the stout ligneous parts diverging, the very long,

smooth, slender twigs drooping much from the weight of the leaves, and still more when in flower, or seed, by the additional weight of the flowers, &c. general height of the trees when seven years old from twenty to forty feet. *Leaves* opposite, approximate, short-petioled, linear-oblong, with a cordate, stem-clasping base, entire, of a firm consistence, smooth on both sides, with the lower side paler, from six to twelve inches long, and from three to five broad. *Panicles* terminal, drooping, sub-globular. *Flowers* very large, from ten to forty in the panicle, with a rather offensive odour. *Calyx* divided about half way down, into six acute, smooth, thick, fleshy permanent segments. *Petals* six, oblong, obtuse; *margins* curled, considerably longer than the segments of the calyx. *Filaments* about eighty, equal, longer than the corol. *Anthers* linear, incumbent. *Germ* superior, conic, six or more grooved, six or more celled, with innumerable *ovula* in each, attached to the large triangularly conic receptacle, rising from the bottom of the cells and longitudinally to the inner edges of the partitions. The space generally occupied by the axis being here empty. *Style* longer than the stamina, often serpentine. *Stigma* ovate, slightly divided into as many lobes as there are cells in the capsule. *Capsule* nearly round, of the size of a very small apple, with smooth, brittle, dark brown, rather thin cortex, surrounded with the permanent segments of the calyx, six or more celled, six or more-valved, opening from the apex, *partitions* longitudinally attached to the middle of the valves, and their inner margins to the inner part of the receptacles. *Seeds* numerous, very minute, linear-oblong, pedicelled, from their apex proceeds a long filiform process, or wing. *Integument* the smallness of the seed prevents me from determining whether there is more than one, it is rather hard where the embryo is lodged, but both extremities are spongy. *Perisperm* none or very thin, and not to be distinguished from the

envelope. *Embryo* straight. *Cotyledons* cordate, oblong, greendotted. *Radicle* subcylindric, pointed to the base of the seed.

2. L. *regina. Willd.* 2. 1178. *R. Corom. pl.* 1. *p.* 4. *t.* 65.

Arboreous. *Leaves* opposite, oblong. *Stamina* equal. *Calyx* variously grooved on the outside. *Capsules* six-celled.

Arjuna. *Asiat. Res.* 4. *p.* 301.

Beng. Jarool.

Adamboe. *Rheed. Mal.* 4. *t.* 20 *and* 21.

L. *Flos. Regina. Retz. Obs.* 5. *p.* 25. *and* 1. *p.* 20.

A native of Bengal, Malabar, &c. H. C. the seed ripens in August. It is a large timber tree, when in blossom beautiful. At Rangoon the timber is used to make knees for ships.

3. L. *parviflora. Willd.* 2. 1179. *R. Corom. pl.* 1. *p.* 48. *t.* 66.

Arboreous. *Leaves* opposite, oblong, downy underneath. *Peduncles* from three to six-flowered. *Stamina* unequal. *Capsule* from three to four-celled.

Teling. Chinangee.

A native of various parts of India. It flowers during the hot season; the seed ripens in August.

4. L. *indica. Willd.* 2. 1178.

Shrubby. *Leaves* nearly opposite, oval. *Petals* with long clawed and much curled. *Stamina* unequal. *Capsules* from five to six-celled.

Hind. Telinga-china.

Velaga globosa. *Gært. fruct.* 2. *t.* 133. *p.* 2.

An exotic from China; it flowers in the rainy season, but rarely ripens its seed here.

CHRYSOBALANUS. Schreb. gen. n. 850.

Calyx five-cleft. ***Petals*** five. ***Style*** lateral. ***Drupe*** with a five furrowed, five-valved nut.

C. *racemosus. R.*

Leaves alternate, short-petioled, oblong, entire, smooth. ***Racemes*** axillary, simple, much shorter than the leaves.

A native of the Moluccas.

SONNERATIA. Schreb. gen. n. 853.

Calyx from four to six-parted. ***Corol*** six-petalled or more. ***Capsule*** superior, many-celled. ***Seeds*** numerous, nestling.

1. S. *acida. Willd.* 2. 999.

Petals six, narrow-lanceolate.

Rhizophora *caseolaris. Linn. syst. veg.* 442.

Maugium *caseolare. Rumph. Amb.* 3. *t.* 73.

Pagapate, *Sonnerat. it. nor. Guin. p.* 16. *t.* 10. *and* 11.

Blatti. *Rheed. Mal.* 3. *t.* 40.

A native of the Delta of the Ganges; flowering time the hot and rainy seasons.

2. S. *apetala. Buch.*

Branchlets pendulous. ***Calyx*** four-parted. ***Corol*** none. ***Stigma*** peltate.

S. *apetala. Syme's Embassy to Ava.* 3. 312.

Beng. Khoura.

An elegant, pretty large tree, a native of the Delta of the Ganges. It flowers during the hot season.

LUDIA. Juss.

Calyx many-parted. *Corol* none. *Germ* superior, one-superior, one-celled, many-seeded, attachment parietal. *Berry* few or many-seeded. *Embryo* centrifugal, and furnished with a perisperm.

1. L. *spinosa. R.*

Arboreous. *Trunk* and large *branches* armed with ramous spines. *Leaves* oblong, remotely obtuse-serrulate, smooth, three-nerved.

A native of Sumatra; from thence plants were sent by the late Dr. Charles Campbell in 1804, to the Botanic garden at Calcutta, where they began to blossom in May 1812, and ripened their fruit in September.

Compare with *spina spinarum. Rumph. Amb. 7. p. 30. t. 19. f. 1.* I suspect they may be the same, and more so as his tree is a native of Java, and mine of Sumatra, neighbouring Islands.

Trunk erect in trees eight years old, fully as thick as a man's leg and with the larger branches dreadfully armed with long, strong, straight, compound spines, as in *Flacoutia cataphracta. Young* shoots smooth and coloured, whole height of those young trees from fifteen to twenty feet. *Leaves* alternate, bifarious, short-petioled, oblong, very remotely and obtusely serrulate, obtusely acuminate, having both sides smooth, and the one upper lucid, triple-nerved, from four to six inches long, and from two to three broad, while young beautifully coloured. *Petioles* short, channelled. *Stipules* minute, triangular. *Racemes* axillary, solitary, simple, shorter than the leaves, few-flowered. *Flowers* small; pale yellow, pedicelled, many of them *male hermaphrodite. Bractes* small, and solitary, under the base of each pedicel, and some round the base of the raceme also. *Flow-*

ers about the size and appearance of those of the common myrtle, many seem abortive, though all are hermaphrodite, and in those the filaments are longer and the anthers lighter-coloured. *Calyx* saucer-shaped; *border* twelve-parted; six of which form an inner series, and are narrower, the whole permanent. *Corol* none. *Filaments* numerous, inserted on the disk or undivided part of the calyx. *Anthers* ovate oblong. *Germ* superior, ovate, one-celled; *ovula* many, attached to three equidistant parietal receptacles. *Style* about as long as the stamina. *Stigma* three-lobed. *Berry* oblong, the size of an olive. *Pulp* of a soft fleshy consistence; the taste of which is something like a bad, sweet pear, though somewhat better. *Seeds* few, roundish-oval, umbilicus pointed, attached as in the germ, and nestling in soft yellow pulp. *Integuments* two, both membranaceous. *Perisperm* conform to the seed, amygdaline. *Embryo* as extended as the perisperm. *Cotyledons* round-cordate, three-nerved. *Radicle* oval, centrifugal.

2. L. *fœtida. R.*

Arboreous, unarmed. *Leaves* oblong-serrate, smooth. *Racemes* axillary, longer than the leaves, compound. *Stigma* four-cleft.

Somer-mera, the Malay name under which it was received from Amboyna into the Botanic garden at Calcutta, where it has been for fourteen years, and for some years past blossoms freely during the rains, but has not yet produced a single full-formed seed-vessel in Bengal. The trees are now about thirty feet high, with a perfectly straight trunk of a proportionate thickness, covered with smooth, olive-coloured bark. *Branches* numerous, spreading and dividing much, the whole forming a large, ovate, very dense crown. The scent of the tree when near it, is particularly fetid.

ICOSANDRIA DIGYNIA.

CRATEGUS. Schreb. gen. n. 854.

Calyx five-cleft. *Corol* five-petalled. *Berry* inferior, two-seeded.

1. C. *crenulata. R.*

Shrubby, spinous. *Leaves* narrow elliptic, crenulate, polished. *Flowers* terminal, sub-racemed, pentagynous. *Berries* oblate, open at top, exposing the five seeds.

A native of Nepal ; in the Botanic garden at Calcutta in eight years it has grown to the height of six or eight feet, very ramous. It flowers during the hot season, and the berries ripen in August.

2. C. *integrifolia. R.*

Procumbent, subspinous. *Leaves* obovate cuncate, entire, coriaceous, hairy underneath. *Flowers* axillary, solitary. *Calycine segments* obtusely triangular and entire.

Found by Colonel Hardwicke on the hills between Hurdwar and Sirinagur. *See Asiat. Res.* 6. *p.* 362—3.

SESUVIUM. Schreb. gen. n. 856.

Calyx or *corol* five-parted. *Capsule* superior, three-celled, circumcised, many-seeded.

S. *portulacastrum. Willd.* 2. 1009.

Crithmus Indicus. *Rumph. Amb. t.* 72. *f.* 1.

Teling. Wangaredookooroo.

A native of the sand hills near the shores of India. In flower and seed the whole year.

ICOSANDRIA PENTAGYNIA.

MESPILUS. Schreb. gen. n. 857.

Calyx five-cleft. *Corol* five-petalled. *Germ* inferior, five-celled; cells two-seeded, attachment the base of the axis. *Berry* few-seeded. *Embryo* erect, no perisperm.

1. M. *japonica. Banks. Icon. Kæmpf. tab.* 18. *Willd.* 2. 1010.

Arboreous. *Leaves* sessile, lanceolar, very acute, serrate, downy underneath; *panicles* terminal, tomentose. *Fruits* obovate, villous.

Chin. Loquat.

From China it was introduced into Bengal where it is much cultivated on account of its excellent fruit, the beauty of the tree, and the exquisite fragrance of its flowers. In the Botanic garden at Calcutta it blossoms twice in the year, but bears fruit only once, viz. in February and March.

2. M. *bengalensis. R.*

Arboreous. *Leaves* petioled, lanceolar, remotely serrate, hard, smooth and glossy except while very young. *Panicles* terminal. *Fruit* obovate, from one to two-seeded.

A large timber tree, a native of Chittagong. Flowering time December and January, the fruit, which is not eaten, ripens in June and July.

PYRUS. Schreb. gen. n. 858.

Calyx five-cleft. *Petals* five. *Pome* inferior, five-celled, many-seeded.

1. P. *communis. Willd.* 2. 1016.

Leaves ovate, serrate. *Peduncles* corymbed.

Arab. Umrood.

Pers. Nash-patee.

I have not been able to discover this tree in its native state in India, the following is the only pear, I have yet been able to find that has not been brought from Europe.

2. P. *malus. Willd.*-2. 1017.

Leaves ovate-oblong, serrate, smooth, or villous. *Umbels* simple, sessile. Claws of the petals shorter than the calyx. *Style* smooth.

Sung. Seeba.

Arab. Tuffa.

It is common all over the western parts of India, and Persia, and but very little improved by culture, consequently the varieties are few.

3. P. *cydonia Willd.* 2. 1020.

Leaves oval, hoary underneath, quite entire. *Stipules* oblong. *Flowers* solitary.

Introduced from Europe, and from the Cape of Good Hope.

4. P. *chinensis. R.*

Leaves cordate, acuminate, finely serrulate smooth. *Stipules* filiform. *Corymbs* pedunculed. *Pedicels* longer than the peduncle, hairy, with scattered filiform bractes. *Styles* smooth. *Fruit* vertically compressed.

Chin. Cha-li.

Salli is the name by which the people about Calcutta know this tree It blossoms at various seasons, but yields few fruits, and those of a very bad quality.

5. P. *indica. R.*

Leaves cordate and ovate, most acutely and finely serrulate, smooth. *Stipules* filiform, the length of the petioles.

A small tree, a native of the little known, mountainous

districts east and north east of Silhet, while the plants are young the leaves are deeply lobate, the fruit round and smooth, a little concave at the base, from one to two inches in diameter; the taste is harsher than the common crab-apple of Europe.

6. P. *tomentosa. R.*

Tender parts tomentose. *Leaves* oblong, obtuse, obtusely serrate; *stipules* scarcely any.

This is the Quince tree of Hindoostan, and most likely that which furnishes the Quince seed brought from Muscat to Bengal for sale, where they are much used for medical purposes under the name Beheeke beej.

SPIRAEA. Schreb. gen. n. 862.

Calyx five-cleft. *Petals* five. *Capsules* five, superior, many-seeded.

S. *corymbosa. R.*

Shrubby, erect. *Leaves* lanceolate, serrate. *Corymbs* terminal, globular.

A native of China and of the mountains north of India, in the Botanic garden at Calcutta; it blossoms more or less the whole year, but most copiously during the hot and rainy season, but never ripens its seed.

ICOSANDRIA POLYGYNIA.

ROSA. Schreb. gen. n. 863.

Calyx pitchered, five-cleft, fleshy, contracted in the neck.

Seeds numerous, hispid, affixed to the interior side of the calyx.

1. R. *involucrata. R.*

Subscandent, armed with strong stipulary, straight prickles. *Flowers* in subsessile fascicles. *Bractes* in form of a four or five leaved laciniate, inferior calyx.

A native of Nepal and Bengal; it flowers about the beginning of the warm weather in February; its seed ripens in the rains. *Stem* and *branches* stout and ligneous, the latter often very long, subscandent, armed with strong, straight, stipulary prickles; *young shoots* villous. *Leaves* pinnate; *common petiole* villous, slightly armed, stem-clasping, base pinnatifid. *Leaflets* opposite, from five to eleven, oblong, serrate, villous underneath; the largest about an inch long, and half an inch broad. *Flowers* terminal, from one to many together, subsessile, large, pure white, sweetly fragrant. *Bractes* four or five, surrounding the base of the germ, singly they are lanceolate, acuminate, with the lower margins deeply laciniate, and villous. *Calyx* villous; *divisions* entire. *Corol* single. *Petals* obcordate. *Germ* globular, villous.

2. R. *centifolia. Willd.* 2. 1071.

Germs ovate, with peduncles hispid. *Stem* hispid, and prickly. *Petioles* unarmed.

Arab. Wurd.

Pers. Gool.

Hind. and *Beng.* Gulab.

3. R. *chinensis. Willd.* 2. 1078.

Germs obovate. *Stem* with remote, large prickles. *Peduncles* hispid. *Petioles* almost unarmed. *Leaflets* about five, broad-lanceolate, serrate, having both sides smooth. Divisions of the calyx downy on the inside.

Beng. Kanta, or Kath-Gulab.

A native of China. Flowering time the cold season. It agrees so well with Linnæus's description of

Rosa Indica, as to induce me to think they are the same.

4. R. *glandulifera. R.*

Germs oblong, shrubby, subscandent, armed. All the tender parts ciliate, with glutinous, headed glands. *Leaflets* from five to seven, ovate, doubly-serrate. *Segments* of the calyx sub-ensiform, finely pinnatifid. *Flowers* terminal in large corymbiform panicles.

Beng. Swet, or Sheooti gulab.

Found in gardens throughout India, where it is commonly called the white rose ; its flowers being double, fragrant and white, like the white rose *(R. alba,)* of Europe. Where this plant is indigenous is uncertain, probably China, as I know it has been brought from thence to the Botanic garden at Calcutta. It blossoms all the year round ; but chiefly during the cold season.

5. R. *semperflorens. Willd.* 2. 1078.

Germ globular, smooth ; *peduncles* hispid. *Stems* and *petioles* aculeate. *Leaves* quinate, pinnate ; *leaflets* lanceolate, serrate. *Calycine segments,* subentire, woolly on the inside.

A small, very ramous species, a native of China. In Bengal it is in constant flower, but most profusely during the cool season.

6. R. *pubescens. R.*

Germs globular. All the tender parts tomentose, and glanduliferous. *Segments* of the calyx entire ; stems, branches and petioles armed. *Leaflets* seven, lanceolar, serrate.

A native of the mountains north of Rohilcund.

7. R. *recurva. R.*

Sub-scandent, well armed, with strong recurved

prickles. *Leaflets* from five to nine, ovate-lanceolate, acutely serrate, smooth. *Stipules* subulate; *petioles* armed.

This stout, straggling, recurved, powerfully armed shrub is a native of Nepal; from thence it was sent by Dr. Buchanan to the Botanic garden at Calcutta, where it has now been ten years and has not yet blossomed. Dr. Buchanan however ascertained the genus in Nepal, where it blossoms freely.

8. R. *diffusa. R.*

Stems and *branches* weak, diffuse, armed with strong, recurved prickles in stipulary pairs. *Leaflets* five, ovate-oblong, villous; *stipules* pectinate.

This distinct species is readily known by its weak, diffuse and procumbent, very long, almost simple branches, which often rest on the ground; it is supposed to be a native of China, as it was brought from Canton to the Botanic garden at Calcutta.

9. R. *microphylla. R.*

Suffruticose, armed with straight pairs of stipulary prickles only. *Leaflets* seven or nine, minute, oval, finely and acutely serrulate; *stipules* ensiform, entire.

Chin. Hoi-tong-hong.

Introduced from Canton into the Botanic garden at Calcutta.

10. R. *triphylla. R.*

Scandent, armed. *Leaves* ternate; *leaflets* lanceolate.

From China this very extensive rambler was brought to the Botanic garden at Calcutta, previous to 1794, where it thrives luxuriantly, and is known to the Chinese gardeners in the garden by the name, *Tsha-te-bay-fa.*

11. R. *inermis. R.*

Suffruticose, unarmed; *leaves* ternate and quinate-pinnate; *leaflets* lanceolate, serrate, smooth.

Of this very elegant small plant we have two varieties from China: one with double white flowers, called by the Chinese, *Po-mou-he-wong;* the other with double yellow flowers, *Wong-mour-he-wong.*

RUBUS. Schreb. gen. n. 864.

Calyx five-cleft. *Petals* five. Berry superior, compound grains one-seeded.

1. R. *hexagynus.*

Shrubby, scandent, armed. *Leaves* simple, oblong and oblong-cordate, serrate. *Panicles* terminal. *Flowers* hexagynous; *petals* linear, shorter than the calyx.

Hera-Chora, the vernacular name in Silhet, where the plant is indigenous. It flowers about the end of the rains, and the seeds ripen in the cool season.

Stem in full grown plants, as stout as a man's arm, with numerous, very long, climbing, round branches, and villous branchlets, all armed with small recurved prickles; when their apices rest on the ground, they strike root. *Leaves* alternate, short-petioled, simple, from oblong to ovate-cordate, serrulate, villous underneath; rib and petioles armed; from three to five inches long and from one to two broad. *Stipules* slender, and often divided into filiform, villous segments. *Panicles* terminal, large and very ramous, villous. *Flowers* numerous, small, long-pedicelled, white. *Bractes* solitary at all the divisions, from simply filiform to multifid, villous. *Calycine segments* undivided, with the end subulate. *Petals* linear, and a little shorter than the calyx. *Filaments* numerous, inserted on the calyx, and nearly the length of the petals. *Anthers* oval. *Germ* six, inserted in the centre of a con-

vex, very hairy, receptacle, one-celled, containing one *ovula* attached to the top of the cell. *Style* the length of the germ, permanent. *Stigma* simple. *Seeds*, rather, *partial berries*, for they are so, from one to six, generally three or four, distinct, obliquely ovate, smooth, red and succulent; when dry wrinkled, almost chocolate-coloured. *Integuments* two, the exterior one sublucid; the inner one membranaceous. *Perisperm* none. *Embryo* inverse. *Cotyledons* ovate, conform to the seed. *Radicle* superior.

It ought to be compared with Dr. Smith's *Rubus pyrifolius*. To me it appears to differ from his figure and description, in the leaves being broader and cordate at the base; in all the calycine segments being undivided, and lastly in the petals being only a little, say one-fourth, shorter than the calyx.

2. R. *gowree phul. R.*

Shrubby, armed with recurved prickles and terminal, subpanicled. *Petals* twice the length of the calyx. Rubous. *Asiat. Res.* 6. *p.* 364.

A native of the Sewalik mountains, which bound Hindoostan on the north.

A large, bushy, perennial plant, with very long spreading and recurved branches, and somewhat five-sided, succulent; *branchlets* armed with many sharp recurved prickles, and a great quantity of long harsh diverging reddish-brown hair.

Leaves scattered, ternate. *Leaflets* oval, serrate, downy and whitish underneath, from two to four inches long. *Petioles* round, armed and hairy like the branches. *Stipules* petiolary, subulate. *Flowers* axillary, and terminal, forming small corymbiform panicles, pretty large and white. *Bractes* subulate downy. *Calyx* downy, particularly on the outside. *Petals* cuneiform-obovate, twice the length of the calyx, pure white. *Stamens* in a single series round the germ, and of nearly the same height.

Introduced into the Botanic garden at Calcutta by Col. Hardwicke, where plants grow most luxuriantly; it blossoms during during the dry months of February and March, but the berries never ripen well, nor are they so palatable as Col. H. found them in their native soil on the Sewalik mountains.

3. R. *moluccanus*. *Willd*. 2. 1086.

Shrubby, prickly. *Leaves* simple, cordate-ovate, serrate, downy underneath. *Panicles* terminal, with axillary umbellets.

Rubus Moluccanus latifolius. *Rumph. Amb.* 5. *p. t.* 47. *f.* 2.

A native of the Malay Archipelago.

4. R. *paniculatus*. *R.*

Shrubby and smooth. *Prickles* free. *Leaves* pinnate, quinate, ribbed, smooth, acutely serrate. *Panicles* terminal, segments of the calyx subulate; *petals* round. A native of the Moluccas. In the Botanic garden at Calcutta, it blossoms and ripens its fruit, which is rather tasteless, during the rainy and cool seasons, indeed more or less the whole year.

5. R. *rosæfolins*. *Smith. ic. ined*. 3. 60. *Willd*. 2. 1080.

Shrubby, erect, prickly. *Leaves* generally quinate, pinnate, green on both sides, doubly serrate, villous. *Flowers* solitary.

A native of the Mauritius. In the Botanic garden at Calcutta, where it has lately been introduced, it blossoms during the cold season.

6. R. *hirtus*. *R.*

Shrubby. *Stem* and *petioles* prickly, and very hirsute. *Leaves* ternate; *leaflets* round-oval, serrate, villous. *Pa-*

nicles terminal, composed of small umbels. *Petals* oblong, length of the calyx.

A native of the mountains of the Peninsula of India. It flowers during the cold season in the Botanic Garden at Calcutta.

7. R. *racemosus. R.*

Shrubby. *Stem* and *petioles* prickly and villous. *Leaves* pinnate; *leaflets* from five to seven, serrate, villous, ovate, lanceolate, the exterior ones often three-lobed. *Racemes* terminal. *Petals* as long as the calyx.

A native of the mountains of Mysore.

8. R. *rosæflorus. R.*

Shrubby, erect, smooth, armed, as well as the petioles, with recurved prickles. *Leaves* pinnate; *leaflets* from seven to nine, elliptic; *serratures* large and very sharp, hoary underneath. *Comrybs* terminal, hoary, sessile, shorter than the calyx.

Found by Captain Hardwicke in the vicinity of Serinagur. See *Asiat. Res.* 6. *p.* 364.

9. R. *albescens. R.*

Shrubby, long, scandent, or creeping, apices viviparous; armed with sharp, acute prickles, and clothed with a white bloom, which becomes brown by age. *Leaves* pinnate; *leaflets* from five to seven, from cordate to ovate, oblong-serrate, hoary underneath. *Stipules* lanceolate. *Flowers* terminal. *Petals* round, red, shorter than the calyx.

A native of the mountains of Malabar. In the Botanic garden at Calcutta it blossoms and ripens its bramble like fruit during the cool season.

10. R. *gracilis. R.*

Shrubby, slender, creeping, villous, armed, as well as

the petioles, with recurved prickles. *Leaves* ternate, and quinate-pinnate; *leaflets* from round cordate to oblong, doubly serrate, rugose. *Stipules* petiolary, lanceolate. *Flowers* axillary, solitary. *Calyx* twice the length of the spatulate, crenulate petals.

A native of Nepal. It flowers during the hot season in the Botanic garden at Calcutta.

FRAGARIA. Schreb. gen. n. 865.

Calyx ten-cleft. *Corol* five-petalled. *Receptacle* of the seeds ovate, succulent, and coloured like a berry.

1. F. *indica. R.*

Roots tuberous. *Leaves* from ternate to quinate, serrate, hairy. *Peduncles* opposite to the leaves of the runners, solitary, one-flowered. All the divisions of the calyx dentate-serrate, the inner five incurved over the fruit.

It is a native of the banks of the Bruhmapootra, to the east and north-east of Bengal; the fruit is perfectly insipid. It flowers during the cold season in the Botanic garden at Calcutta.

2. F. *malayana. R.*

Runners rooting at the joints. *Leaves* ternate; *leaflets* obovate, cuneate, dentate-serrate, a little hairy. *Peduncles* from the joints of the runners, simple, one-flowered. Exterior divisions of the calyx cuneate, and deeply (three) dentate; inner lanceolate, entire and incurved over the fruit.

A native of the tops of the mountains of Pulo Penang. In the Botanic garden in Bengal it is in flower and fruit the whole year; and the last the berries were perfectly insipid.

COMARUM. Schreb. gen. n. 869.

Calyx ten-cleft. *Petals* five, smaller than the calyx. *Receptacle* (of the seed) roundish, spongy, villous, permanent. *Seeds* naked, smooth.

C. *flavum. Buch.*

Annual, with slender, short, dichotomous, villous branches. *Leaves* pinnate, quinate and ternate, with obovate, gashed, villous leaflets ; *stipules* lanceolate.

A native of Nepal. It flowers about the beginning of the hot season in the Botanic garden at Calcutta.

CLASS XIII.

POLYANDRIA MONOGYNIA.

TERNSTROEMIA. Schreb. gen. n. 872.

GEN. CHAR. *Calyx* five-leaved. *Corol* one-petalled, with a staminiferous tube, and five-parted border. *Anthers* turbinate, with biperforate apices. *Germ* from three to five-celled ; cells many-seeded; attachment interior. *Berries* superior, from three to five-celled, many seeded.

1. T. *serrata. R.*

Leaves alternate, lanceolate, serrate, acuminate. *Peduncles* in lateral fascicles, compound and decompound. *Berries* five-celled.

Daloop the vernacular name in Silhet, where it is indigenous, and grows to the size of the apple, or pear tree. It is used for fuel only. Flowering time April and May, the seed ripens in July and August.

Young shoots clothed with a little grey, meally pubescence. *Leaves* alternate, petioled, from lanceolate to oblong, serrate, acuminate, smooth, except the veins on the under side; from five to ten inches long, and from two to three and a half broad. *Petioles* about an inch long, channelled, meally. *Stipules* none. *Peduncles* lateral, many together, drooping, divided in a triternate manner, with one flower on each of the ultimate divisions. *Flowers* small, rosy. *Bractes* small, opposite at the divisions. *Calyx* five-leaved, permanent. *Leaflets* unequal, oval. *Corol* one-petalled. *Tube* gibbous, sub-campanulate. *Border* of five, nearly round cordate, spreading segments, which are imbricated in the bud, as in the *contortæ*. *Filaments* above fifty, shorter than the tube of the corol, and inserted in a double series into it near the base. *Anthers* turbinate, two-lobed, having a circular opening in each at the top, for the discharge of the pollen. *Germ* superior, ovate, five-celled, with numerous *ovula* in each, attached to as many vertical receptacles, which project into their cells from the axis. *Style* short, five-grooved, five-parted; *segments* spreading and finally recurved. *Stigmas* transversely oval. *Berries* rather dry, nearly round; the size of a small pea, smooth, five-celled. *Seeds* a few in each cell, intermixed with a little pulp, oval, brown.

2. T. *bilocularis. R.*

Branchlets, scaly; *leaves* alternate, cuneate, lanceolate, acute, serrulate. *Flowers* in lateral fascicles below the leaves. *Berries* three-celled.

A native of the Moluccas.

Young shoots clothed with ferruginous subulate scales. *Leaves* short-petioled, cuneate, lanceolate, acute, finely serrulate, smooth, from four to six inches long and two broad. *Flowers* peduncled, and collected in little fascicles over the leafless branchlets, small. *Calyx* five-leaved; *leaflets* roundish, imbricated, smooth, permanent. *Corol*

one-petalled. *Tube* very short. *Border* of five obliquely oblong, spreading, smooth segments. *Filaments* from twenty to thirty, short, broad, inserted at the bottom of the tube of the corol. *Anthers* clavate, opening, with two pores at top. *Germ* superior, ovate. *Style* short, three-cleft; *segments* long and recurved. *Stigmas* simple. *Berry* three-celled, with numerous seeds in each cell, inserted on large receptacles, rising from the axis.

BASSIA. Schreb. gen. n. 805.

GEN. CHAR. *Calyx* four or five-leaved. *Corol* one-petalled; *border* about eight-cleft. *Germ* superior, from six to eight-celled, cells one-seeded, attachment interior. *Embryo* erect, no perisperm.

1. B. *longifolia. Willd.* 2. 842. *Gært. sem.* 2. 104. *t.* 104.

Leaves lanceolate. *Flowers* crowded round the ends of the branchlets, drooping. *Stamina* from sixteen to twenty, within the gibbous tube of the corol.

Tam. Illupi.

A native of the peninsula of India, and found in plantations along the southern part of the coast of Coromandel. It flowers during the hot month of May, the seed ripens in August and September.

Trunk pretty straight, and of considerable thickness, but short, in proportion to the size of the tree. *Branches* numerous, dividing much, and spreading far, forming a very extensive, shady head; *young shoots* downy. *Leaves* crowded about the ends of the branchlets immediately above the peduncles, lanceolate, smooth, entire. *Petioles* from one to two inches long, round, slightly villous. *Stipules* ensiform, downy, very early caducous. *Peduncles* crowded round the base of the young villous shoots, twenty-three inches long, drooping, one-flowered. The

bractes, if any, fall so soon, and are so small, that I have not detected them. *Calyx* of two opposite pairs of ovate oblong, rather acute, somewhat villous leaflets. *Corol Tube* length of the calyx, gibbous, of a thick, firm, fleshy texture; *border* eight-cleft; *segments* sub-lanceolate. *Filaments* scarcely any. *Anthers* from sixteen to twenty, attached to the inside of the tube of the corol. *Germ* from six to eight-celled, with one *seed* in each, attached to the inner and under-side of the cell. *Style* twice as long as the corol. *Stigma* contracted, but evidently from six to eight-toothed. *Berry* oblong, the size of a large plum, villous, pulpy, when ripe yellowish, seldom more than three-celled, and one is more common; in the germ, always from six to eight. *Seed* solitary, oblong, of various shapes according to the number in the berries, attached to the lower half of the axis. *Perisperm* none. *Embryo* erect. *Cotyledons* conform to the seed. *Radicle* roundish, inferior.

I cannot account for Gærtner's large, five-celled, five-seeded berry, and suspect it belongs to some species which I have not yet met with, probably one *Rumph's. Vidoricum. See vol.* i. *of his Hor. Amb. page* 173 *and* iii. 184.

Economical uses of the Illupie tree. *Bassia longifolia* by the Rev. Dr. John of Tranquebar.

1. The oil pressed from the ripe fruit is used by the natives as common lamp oil, who cannot afford to buy cocoanut oil. It is thicker, burns longer but dimmer, smokes a little, and gives some disagreeable smell which common people do not mind.

2. It is a principal ingredient in making the country soap, and keeps therefore often the same price with the cocoanut oil.

3. It is to the common people a substitute in place of ghee and cocoanut oil in their curries and other dishes. They make cakes of it, and many of the poor get their livelihood by selling these sweet oil cakes.

4. It is used to heal different out-breakings, such as the itch, &c.

5. The cake left after the oil is expressed, is used for washing the head, and is carried as a small article of trade to those countries where these trees are not to be found.

6. The flowers which fall in May are gathered by the common people, dried in the sun, roasted and eaten as good food. They are also bruised and boiled to a jelly, and made into small balls, which they sell or exchange for fish, rice, and various sorts of small grain.

7. The skin is taken off from the ripe fruit as well as the unripe, and after throwing away the unripe kernel, boiled to a jelly, and eaten with salt and *capsicum*.

8. The leaves are boiled with water, and given as a medicine in several diseases to both men and cattle.

9. The milk of the green fruit and of the tender bark is given also as a medicine.

10. The bark is used to cure the itch.

11. The wood is as hard and durable as *Teak* wood, but not so easily worked, nor is it procurable of such a length for beams and planks, except on clay-ground, where it grows to a considerable height, but in such a soil does not produce so many branches, and is less fruitful than when in a sandy or mixed soil, which is the best for them. In a sandy soil the branches shoot out nearer to the ground to a great circumference, and give more fruit. These trees require but a little attention and watering during the first two or three years in the dry season, and being of so great use, we have here whole plantations of them on high and sandy grounds, where no other fruit tree will grow.

12. We may still add, that the owls, squirrels, lizards, country dogs and jackals, take a share in the flowers, but the report is that the latter, especially in the time of blossom, are apt to grow mad by too much feeding on them.

2. B. *latifolia. Willd.* 2842. *Corom. pl.* 1. *No.* 19.

Leaves oblong. *Calyx* four-leaved. *Stamina* from twenty to thirty, within the gibbous tube of the corol.

Madhaca, is the Sanscrit name. *See Asiat. Res.* 1. *p.* 300. *vol.* ii. *p.* 301, *and* iv. *p.* 280.

M*u*dhook*a*, G*u*roodshpoo, Madh*a*ram*a*, V*oo*nap*r*ustha, M*u*dhooshp*oo*theel*a*, M*u*dhoo.

Mahwa, M*u*hooa, and M*u*hoola of the Bengalese.

Teling. Ipie.

A middling sized tree, a native of the mountainous parts of the Circars and of Bengal. *Leaves* deciduous during the cold season, and appearing again with the flowers in March and April. The seed ripens in July and August.

Trunk straight but short, covered with smooth, ash-coloured bark. *Branches* very numerous, the lower ones spreading horizontally. *Leaves* alternate, petioled, crowded about the extremities of the branches, oblong, rigid, smooth above, somewhat whitish below, from four to eight inches long, and from two to four broad. *Petioles* round, about an inch long. *Stipules* subulate, downy. *Flowers* numerous, crowded from the extremities of the branchlets, peduncled, at all times bowing, viz. bent with the mouth of the flower directly to the ground. *Peduncles* about an inch long, round, thickened, covered with rust-coloured down. *Calyx* as in the genus. *Corol tube* as in the genus. *Border* from seven to fourteen-parted. *Germ* ovate, hairy, from six to eight-celled, with one seed in each, attached to the upper end of the large axis. *Berry,* the size of a small apple. *Seeds* from one to four, very rarely more. *Embryo* erect, and without perisperm.

This is a very useful tree. The wood is hard, very strong, and proper for naves of wheel carriages, &c.

The flowers are eaten raw by the natives of the mountainous parts of the Circars, and by jackals. They have a sweet spirituous taste. An ardent spirit is distilled from them by the hill people, which is strong and intoxicating.

The seeds yield a large quantity of oil by expression; but it is thick, of a quality inferior to castor oil, and used only by the poorer people to burn. Large plantations of *B. longifolia* are to be found about Tranquebar, Karikal, Nagur and Nagapatam; but the proprietors do not find them answer their expectations.

On the apices of the flowers, before they open, there is frequently a drop of a whitish, soft, tasteless resin to be found.

3. B. *butyracea. Roxb. in Asiat. Res.* 8. 477.

Leaves obovate. *Calyx* five-leaved. *Stamina* from thirty to forty crowning the subcylindric tube of the corol.

Frelwa or Phulwara, of the natives of the Almora hills, where the tree is indigenous. Flowering time the month of January; the seed ripens in August. For a full account of this valuable species, see the volume of the *Asiatic Researches* above quoted.

DIOSPYRUS. Schreb. gen. n. 1598.

GEN. CHAR. POLYGAMOUS. HERMAPHRODITE. *Calyx* and *corol* four, rarely five-cleft. *Stamina* varying in every species, and often abortive. *Germ* superior, many-celled, cells one-seeded, attachment superior. *Styles* three or four, rarely five, or one and variously divided. *Berry* from one to twelve-seeded. *Embryo* inverse, and furnished with a perisperm.

MALE in general on a different tree. *Calyx* and *corol* as in the hermaphrodite, but with stamina more numerous, and frequently with twin-anthers.

1. *Diospyrus. Kaki. Suppl. p.* 439. *Willd.* 4. 1110.

Leaves bifarious, ovate-cordate, downy. MALE *peduncles* three-flowered. *Stamina* about twenty; hermaphrodite solitary, octandrous. *Style* four-cleft. *Stigmas* bifid.

Kaki. *Kempf. amoen. p.* 805. 6. 7.

The Chinese gardeners employed in the Botanic garden at Calcutta call it *Chin*.

A native of China, and from thence introduced into the Botanic garden at Calcutta, by the late Col. Kyd, where it blossoms in March.

In twelve years they have only grown to be from twelve to fifteen feet high, with but few sub-erect branches. The bark is pretty smooth, but of a dark brown colour, that of the young shoots downy.

Leaves alternate, short-petioled, cordate, more or less acuminate, entire, very downy on both sides, particularly while young; from two to five inches long, and from one to four broad. *Stipules* none.

ABORTIVE HERMAPHRODITE, or rather male flowers small, yellow, sometimes on the same, sometimes on a different tree. *Peduncles* axillary, and from the base of the young shoots, recurved, short, villous, from one to three or more-flowered. *Bractes* small, caducous. *Calyx* four-cleft; *divisions* ovate, half the length of the corol. *Corol* urceolate; *mouth* four-cleft; *divisions* contorted, sub-orbicular, emarginate, becoming revolute soon after expansion. *Filaments* from sixteen to twenty-four, or even more, very short, inserted sometimes by hairs, sometimes singly round the bottom of the tube of the corol. *Anthers* sagittate, hid in the tube of the corol. *Pistil* none, or in some trees a small, conical villous gland.

FERTILE HERMAPHRODITE flowers solitary, on short drooping peduncles. *Calyx* and *corol* as in the abortive hermaphrodite, but larger. *Filaments* generally eight, short, inserted into the bottom of the tube of the corol. *Anthers* sagittate, with the barbs bearded. *Germ* superior, conical, smooth, eight-celled, attached to the top of the axis. *Style* four-cleft. *Stigmas* two-lobed. *Berry* nearly round, of the size of a small orange, when ripe yellow, smooth, and

abounding in edible yellow, fleshy pulp, covered with a firm but soft skin, eight-celled. *Seeds* one in each cell, when all come to perfection, which is uncommon, from semi-orbicular to linear-oblong, compressed, attached from the apex to the top of a soft central receptacle. *Integuments* single, firm, pretty thick, brown, polished, two-valved, with a slender, lighter coloured groove running down the back, or convex edge. *Perisperm* conform to the seed, cartilaginous, pearl-coloured. *Embryo* inverse, half the length of the perisperm. *Cotyledons* two, ovate-oblong. *Radicle* subcylindric; straight, superior, with its apex close to the umbilicus.

This tree is now pretty common about Calcutta, and I find it is not only a native of Japan but of China, and the mountains of Nepal, to the northward of Bengal. The fruit is tolerably pleasant, though by no means equal to a good apple, but what is worse, the trees about Calcutta are uncommonly unproductive.

1. D. *Ebenum. Kön. in. Suppl. pl.* 440.

Leaves short-petioled, alternate, bifarious, oblong, entire, polished. MALE FLOWERS sub-racemed, with about twenty anthers; HERMAPHRODITE solitary, octandrous. *Style* single. *Stigma* four-cleft.

D. *Ebenum. Suppl. p.* 440.

Hebenaster. *Rump. Amb. vol.* 3. *p.* 13. *t.* 6. appears to be the same.

2. D. *Ebenaster. Willd.* 4. 1109.

This species is a tree of considerable magnitude, a native of Ceylon. There are many young trees in this garden, they grow slowly, and flower during the hot season, but have not yet produced fruit.

Leaves short-petioled, bifarious, alternate, oblong, entire, of a firm texture, and smooth on both sides; from two to four inches long. MALE FLOWERS on a separate

tree. *Peduncles* axillary, drooping, many-flowered. *Calyx* funnel-shaped: *tube* a little bellied, and considerably longer than the calyx. *Border* four-parted. *Filaments*, number uncertain, inserted into the very base of the tube of the corol; some are simple, others two, three, or even four-cleft. *Anthers* generally about twenty, that is, one on each division of the filaments.

FEMALE HERMAPHRODITE FLOWERS axillary, subsessile. *Calyx* beneath, four-parted, with a callous, elevated, four-lobed, permanent, marginal ring round its mouth, inside villous. *Corol; tube* cylindric, about as long as the divisions of the calyx. *Border* four-parted. *Filaments* eight, very short. *Anthers* small, sterile. *Germ* conical. *Style*, shorter than the tube of the corol. *Stigma* four-parted. *Berry* nearly globular, succulent, when ripe, yellow, and about the size of a large cherry, resting on the permanent, reflexed calyx; *cells*, eight is the natural number. *Seed*, one in each cell semi-ovate, thin on the inner edge, of a light brown colour, and smooth, united at the apex to the central receptacle.

There are many species of this extensive genus, which yield a hard, black wood. I mean, pure intensely black (not variegated,) to all of which we give the general appellation Ebony; my D. *Melanoxylon* is one. The species I am now describing, a second. *Ebenus, Rumph. Amb. vol.* 3. *p.* 1. *t.* 1, seems a third. From all these I know that of the Mauritius differs essentially, by the entire fruit, with ripe seed, just received from that Island, and now before me. The mountains of Bengal, Bootan, and Nepal produce at least another very distinct species, viz. my *tomentosum*, several young trees of which are now in this garden.

3. D. *melanoxylon. Willd.* 4. 1109. *Corom. pl.* 1. *N.* 46.

Leaves sub-opposite, oval and oblong, obtuse, villous. MALE PEDUNCLES from three to six-flowered. HERMA-

PHRODITE, solitary, sub-sessile with calyx and corol five-cleft. *Styles* three or four. *Berry* with as many as eight seeds.

Tumballi of the Tamuls.
Tindoo of the Hindoos.
Coromandel Ebony-tree.
Tumida of the Telingas.

The Ebony tree is a native of most woody mountainous countries in India, viz. Ceylon, Malabar, Coromandel, Orissa, &c. It grows to be very large, particularly the male tree; the wood of this sort is also more esteemed. Leaves deciduous in the cold season; the new ones appear with the flowers in April and May.

Trunk tolerably straight in large trees, from twenty to twenty-five feet to the branches, and about eight or ten in circumference. *Bark* scabrous, or deeply cracked, somewhat spongy, colour a mixture of grey and black, in irregular strata. *Branches* very irregular, numerous, rigid, forming a large spreading, shady head; *young shoots* very downy. *Leaves* nearly opposite, short-petioled, oblong, entire, obtuse, when young very downy, when old pretty smooth; about four inches long, and one and a half broad. *Stipules* none.

MALE PEDUNCLES axillary, single, short, bearing three or four small whitish flowers, supported by short bowing pedicels. *Bractes* a small one at the insertion of each pedicel, and one or two, still smaller pressing the calyx. *Calyx* and *corol* as in the genus. *Filaments* generally twelve or thirteen, short, inserted into a receptacle. *Anthers* linear, erect. *Pistil* none.

HERMAPHRODITE FLOWERS rather larger than the male, axillary, single, nearly sessile. *Bractes,* a small one pressing the calyx. *Calyx* always five-cleft, downy. *Corol* five-cleft. *Filaments* about ten, short, inserted into a receptacle between the germ and flower. *Anthers* small, seemingly sterile. *Styles* three, nearly erect; *stigma*

bifid. *Berry* round, of the size of a small apple, yellow, pulpy. *Seeds* as many as eight, immersed in the pulp, kidney-shaped, sharp on the inner straight edge.

The black part of the wood of this tree is too well known to require any description in this place. It is only the centre of large trees that is black and valuable; which part is more or less in quantity, according to the age of the tree. The outside wood is white and soft, which time and insects soon destroy, leaving the black untouched. The ripe fruit is eaten by the natives; it has an astringent taste, and is not very palatable. The bark is also astringent. Powdered and mixed with pepper, it is given for the dysentery by the native doctors.

4. D. *tomentosa. Roxb.*

Diœcous, all the tender parts very downy. *Leaves* opposite, and alternate, oval, entire. MALE PEDUNCLES three-flowered. *Calyx* and *corol* gibbous, four-toothed. *Stamens* twelve, on a receptacle. FEMALE solitary, with the calyx and corol five-parted; *berry* as far as five seeded.

Kakindoo, the Sanscrit name.

Beng. Kyou.

A native of the northern parts of Bengal, where it grows to be a tree of great size; the wood is black, hard, and heavy; in short the Ebony of that country. In a garden at Allipore, formerly belonging to Mr. Hastings, are some of the oldest trees about Calcutta. They may be about thirty years old. The trunk and whole tree very erect, tall and slender, not unlike the form of the common Cypress. The leaves are completely deciduous during the cold season, and appear again with the flowers in April.

Trunk of the trees just mentioned, erect, though not perfectly straight, with deeply cracked, spongy bark. *Leaves* sub-opposite and alternate, petioled, oval, entire, very downy while young, particularly underneath;

from four to six inches long, and from two to three broad. *Petioles* short, very downy.

MALE PEDUNCLES axillary or round the base of the young downy shoots, round, recurved, very downy, three-flowered. *Flowers* small, whitish. *Bractes* small, covered with much ferruginous down. *Calyx* gibbous, very downy, four-toothed. *Corol; tube* gibbous, downy. *Border* of four cordate, downy, contorted divisions. *Stamens* about twelve, inserted on a receptacle in the centre of the corol, and shorter than its tube.

FEMALE PEDUNCLES axillary, solitary, very short, one flowered. *Calyx* five-cleft, downy on the outside, and hairy on the inside, divisions triangular, with waved reflexed margins. *Corol; tube* short, cylindric, hairy; *mouth* five-parted. *Stamens* none. *Germ* round, hairy, five-celled, with one *ovula* in each. *Styles* two. *Berry* ovate, as large as a pigeon's egg, covered with a smooth, hard bark, which becomes yellow when ripe, and is filled with a soft yellow, edible pulp. *Seeds* as far as five, when all come to perfection.

5. D. *glutinosa. König.*

Leaves linear-lanceolate, smooth. MALE PEDUNCLES from three to four-flowered, with about twenty filaments, and forty anthers. HERMAPHRODITE solitary, with from one to four. *Styles* four.

Embryopteris *glutenifera. Willd.* 4. *p.* 836. *R. Corom. pl.* 1. *N.* 70. and I suspect *Embryopteris peregrina. Gœrt. Sem.* 1. 145. *t.* 29. to be the same, and that by some mistake or accident, the fruit, &c. have been inverted.

Tindooka, the Sanscrit name.

Hind. and *Beng.* Gaub.

Teling. Tumika.

Panitsjika-marum. *Rheed. Mal.* 3. *t.* 41.

A middle sized tree, growing in the moist coo vallies,

amongst the mountains in the Circars. *Leaves* not deciduous. *Flowering* time, March and April.

Trunk erect, straight, middle sized. *Bark* pretty smooth, of a dark blackish rust colour. *Branches* spreading, scattered; *young shoots* smooth. *Leaves* alternate, short-petioled, bifarious, linear-oblong, pointed, smooth, firm, shining; when young soft and red, six inches long and two broad. *Stipules* a single variegated one which bursts and falls when the leaf begins to expand.

MALE PEDUNCLES axillary, single, bowing, bearing three four or more small white flowers. *Bractes*, a small deciduous one, below each pedicel. *Calyx* and *corol* as in the genus. *Filaments* about twenty, bifid at the point. *Anthers* about forty, linear, erect.

HERMAPHRODITE PEDUNCLES axillary, single, undivided, bearing one white flower, which is considerably larger than the male. *Calyx* and *corol* as in the genus. *Filaments* one, two, three, or four, small, short. *Anthers* linear, small, sterile. *Germ* globular, eight-celled, with one *ovula* in each, attached to the top of the axis. *Styles* four, spreading. *Stigmas* branched, generally three-cleft. *Berry* globular, as large as a middle-sized apple, pulpy, rusty, yellow when ripe and covered with a rust coloured farina. *Seeds* generally eight, immersed in pulp, reniform, straight, thin at the edge. The wood of this tree is but of an indifferent quality, and not much used.

The ripe fruit is eaten by the natives, but I cannot say it is palatable; it is strongly astringent.

Sir William Jones writes me from Calcutta on the 29th December 1791, that the name by which this tree is generally known in Bengal is Gaub, (in Sanscrit it is called Tindooka,) and that the astringent viscid mucus of the fruit, is used all over that country, for paying the bottom of boats. The unripe fruits contain a very large proportion of Tannin. An infusion is employed to steep fishing nets in, to make them more durable, and probably adds to their strength.

6. D. *sapota. Roxb.*

Leaves bifarious, oblong, entire, obtuse, polished. MALE PEDUNCLES many-flowered, with about sixteen hairy anthers, on eight or ten hairy filaments. HERMAPHRODITE solitary, with about the same number of filaments and anthers. *Berry* globular, the size of a large orange, with a few irregular-shaped seeds.

Sapotte-nigra, *Sonnerat it. nov. Guin. p.* 45. 1. 14. 15. *and* 16.

A native of the Mauritius, and from thence introduced by the late Hyder Ally, into his garden at Seringapatam; from thence in 1804, Dr. Berry of Madras sent Dr. R. good specimens, and the entire ripe fruit. Since that time the tree has been introduced from the Mauritius into the Botanic garden at Calcutta, where it grows most luxuriantly and blossoms in the hot season, but has not yet perfected its fruit in Bengal.

7. D. *ramiflora. Roxb.*

Arboreous. *Leaves* lanceolate, glossy; hermaphrodite and male flowers in fascicles from the large woody branches. *Calyx* and *corol* from five to six-parted. *Style* from five to six-cleft. *Berry* with ten or twenty seeds.

Oori-gaub, also *goolul* of the natives of the eastern frontier of Bengal, where the tree grows wild, and to a great size, and supplies the natives with very strong, hard wood. A single hermaphrodite tree only of this species grows in the Botanic garden at Calcutta. It is about twenty years old, and was brought from the hills immediately east of Tippera. Flowering time, the end of March and April; and the fruit, which is as large as an orange, takes about twelve months to ripen.

Trunk straight. *Branches*, numerous, spreading; *branchlets* alternate, bifarious. *Bark* of the old woody parts smooth, of a dark olive brown, that of the young parts smooth and green. *Height* of the individual tree in this

garden about sixteen feet; on the mountains of Tippera, Silhet, &c. where indigenous, they grow to a great size; but it is evidently a tree of very slow growth, as are most, if not the whole of the genus. *Leaves* alternate, bifarious, short-petioled, lanceolate, acute, entire, of a firm texture, and deep smooth shining green on both sides, from six to ten inches long, and about two or three broad. *Flowers* collected in small, subsessile fascicles, over the thick woody branches, the hermaphrodite ones on one tree, and the male ones on another. The short, thick, scaly peduncles and calyx are clothed with much dark, olive-coloured down; the corol white and smooth. *Calyx* five or six-toothed, half the length of the tube of the corol. *Corol* one-petalled; *tube* somewhat gibbous, margin five or six-parted; *divisions* contorted, sub-reniform, at first spreading then revolute. *Filaments,* ten or twelve, inserted into the base of the tube of the corol. *Anthers* sub-sagittate, small, and containing little pollen, whence I conclude there is a male tree, which I have not yet seen. *Germ* in the hermaphrodite flowers ovate, smooth. *Style* short. *Stigmas* five or six, thickening, expanding. *Berry* globular, a large apple, slightly scabrous, resting on the very thick enlarged calyx, replete with yellowish edible pulp. *Seeds* ten or twelve, oblong, thin on the inner edge where they are united to the central receptacle.

8. *D. racemosa. Roxb.*

Leaves from oblong to lanceolar, obtuse, glossy. Both male and hermaphrodite flowers on axillary, comose racemes, the former with twenty or thirty stamina, the latter with twelve or sixteen; *germ* four-celled. *Style,* none; *stigma* four-cleft. *Berries* round, smooth, with as many as four seeds.

Goolul, the vernacular name in Silhet.

A middling sized tree, a native of the mountainous

countries east of Bengal, where it blossoms in April; the fruit ripens in November, and is eaten by the natives.

9. *D. lanceæfolia R.*

Leaves short-petioled, lanceolate, and polished. *Flowers* sessile; the male flowers crowded in axillary heads; the hermaphrodite solitary.

Goolul the vernacular name in Silhet, where it grows to be a pretty large tree, and furnishes the natives with hard durable timber, for the construction of their habitations, &c. Flowering time in April; the fruit is edible.

Leaves alternate, bifarious, short-petioled, lanceolate, entire, lucid; texture particularly hard; from four to six inches long, and from one to two broad.

MALE FLOWERS sessile, and crowded together in the axills of the present leaves as well as in those of last year; it is the only species I have yet met with that has sessile flowers. *Calyx* downy, four-toothed. *Corol* with gibbous tube and imbricated four-parted border. *Filaments* about sixteen, short, inserted into the receptacles. *Anthers* linear.

HERMAPHRODITE *Flowers* axillary, solitary, sessile, cernuous. *Calyx* downy, from four to five-toothed; from the apex a keel runs down on the outside. *Corol* downy on the outside. *Tube* gibbous. *Border* from four to five-parted; *segments* cordate, imbricated in the bud. *Filaments* from eight to ten, short, inserted on the base of the tube of the corol. *Anthers* linear. *Germ* hairy, ovate, torulose, eight-celled, with one *ovula* in each attached to the top of the axis. *Style* scarcely any. *Stigma* with about as many short divisions as there are cells in the germ.

10. D. *sylvatica. Willd.* 4. 1108. *R. Corom. R.* 1. *No.* 47.

Leaves from oval to oblong, smooth. Male peduncles many-flowered, with about eighteen single-anthered fila-

ments; female hermaphrodite, solitary, with an ample calyx. *Berry* with as many as eight seeds.

Tella-goda of the Telingas.

A native of the Circars, where it blossoms during the hot season.

11. D. *montana. Willd.* 4. 1110. *R. Corom. pl.* 1. *N.* 48.

Armed. *Leaves* ovate-oblong, smooth. Male flowers numerous, with about eight filaments, and sixteen anthers; female hermaphrodite solitary, with only four sterile stamina, as many as eight seeds.

Yerra-goda of the Telingas.

A native of the Circar mountains; it flowers during the hot season.

12. D. *chloroxylon. Willd.* 4. 1112. *R. Corom. pl.* 1. *N.* 49.

Armed. *Leaves* oblong, downy underneath. Male flowers fascicled, with about twelve filaments and sixteen anthers; hermaphrodite solitary, with about eight single stamina; *styles* four. *Berry* two or three-seeded.

Nella-woolimera of the Telingas.

A native of the Circars; it flowers during the hot season.

13. D. *cordifolia. Willd.* 4. 1111. *R. Corom. pl.* 1. *N.* 50.

Armed. *Leaves* linear-cordate, downy. Male pedunclcs three-flowered, with about eight filaments and sixteen anthers; hermaphrodite single, with twelve single stamina; *styles* four. *Berry* eight-seeded.

Tumala; the Sanscrit name.

Teling. Kok wolimera.

Beng. Bun-Gaub.

Found over most parts of India, and with the whole of the other species blossoms during the hot season, that is, from the beginning of February to the end of May.

14. D. *stricta. R.*

Trunk straight to the top of the tree. *Leaves* ovate-lanceolate. Male peduncles from three to six-flowered; *stamina* sixteen on a convex receptacle.

A tall slender conical tree with a trunk perfectly straight, as in the Firs, to the very top; a native of Tipperah; it flowers in March.

The female tree unknown.

15. D. *bracteata. R.*

Leaves oblong, acute. *Fertile flowers* solitary and bracted: *styles* four. *Berry* with as many as eight seeds.

A native of the Dooab; the male tree has not been found.

SYMPLOCOS. Schreb. gen. n. 1223.

Gen. Char. *Calyx* superior, five-parted. *Corol* one-petalled, rotate, with the stamina inserted on its base. *Germ* semi-infera, three-celled; cells few-seeded; attachment to the upper end of the axis. *Drupe* inferior, thirteen-celled. *Seeds* one or two. *Embryo* inverse, and furnished with a perisperm.

1. S. *racemosa. Roxb.*

Racemes axillary. *Leaves* oblong, smooth, serrulate.

Sans. Savura, Lodhra.

Beng. Lodh.

A small tree of from twelve to twenty feet high, a native of Burdwan and Midnapore in Bengal. Flowering time the month of December; the seed ripens in May.

Compare this plant with *Myrtus Retz. obs.* 4. *p.* 26.

Trunk about twenty inches in circumference. *Bark* somewhat rough, with a spongy, friable, exterior grey coat, inwardly of a firm, fleshy texture; when fresh, of a very pale yellowish colour, and the taste mildly as-

tringent. *Leaves* alternate, short-petioled, from ovate-oblong to broad-lanceolar; margins serrulate, both sides smooth, of a thick firm texture, from two to six inches long, and from one to one and a half broad. *Stipules* none. *Racemes* axillary and terminal, single and generally simple, shorter than the leaves, many-flowered. *Flowers* solitary, approximate, small, short-peduncled; *colour* a lively yellow. *Bractes* three to each flower, ovate, villous, one, viz. the largest under the pedicel, and two placed opposite at the base of the germ. *Calyx* superior, five-parted, permanent; *segments* broad-ovate or nearly round-obtuse. *Corol* one-petalled, rotate. *Border* five-parted; *segments* oval, deeply divided, concave, smooth, thrice the length of the calyx or more. *Filaments* numerous, as long as the corol, and inserted into its base. *Anthers* small, two-lobed. *Germ* inferior, turbinate, three-celled, with from two to four *ovula* in each, attached to the inner and upper angle of the cells (upper end of the axis.) *Style* shorter than the stamina. *Stigma* three-lobed. *Drupe* oblong, smooth, with a beautiful purple pulp in small quantity, when ripe purple, crowned with the permanent calyx. *Nut* conform to the drupe, three-celled. *Seed* generally solitary, (with the abortive integuments of the other one or three close by its apex) linear-oblong, attached to the inside of the top of the cell. *Integument* seems single, tough, and thick, colour on the outside light brown. *Perisperm* conform to the seed, rather soft. *Embryo* cylindric, inverse. *Cotyledons* small, oblong; *radicle* three or four times longer than the cotyledons, cylindric, superior.

The bark of this small tree is in request amongst the dyers of red in Calcutta, and is met with in the markets in that city for a trifling price.

It seems to be used as a mordant only. To dye with Munjeet (East India madder,) in which the bark called *Lodh* is an ingredient. For three yards of cloth take

Lodh, the bark is meant, *Bura Hur (Myrobolana Chebula. Mat. Med. Terminalia chebula Roxb.)* of each one chatuk, or two ounces, pound and rub them with water on a stone; mix them up with water, and steep the cloth in it, then dry it. Take one chatuk of alum, dissolve it in water, and boil it, put the cloth into this solution, and let it boil for an hour, then wash and dry it. Then take *Al*, viz. *Morinda tinctoria. Roxb.* one chatuk Dhawra flowers, *Grislea tomentosa. Roxb.* one chatak *Munjeet Rubia Munjeet. Roxb.* half a seer, nearly a pound, separately, mix them with lukewarm water, and let it boil. Then put in the cloth, and let it remain boiling for forty minutes.

Aboor the red powder used by the natives during the *Hoolee* holidays is made about *Kheerpaee*, of the bark of this tree.

2. S. *spicata. Roxb.*

Leaves from lanceolar to oblong-serrate, acute. *Spikes* axillary, compound. *Drupes*, curceolate-torose; *nut* one-celled, one-seeded.

Booree, the vernacular name in Silhet, where it is indigenous, growing to be a middle-sized tree. It flowers in August, and the seeds ripen in the cold season. They are very hard, about the size of a pea, and resemble a minute fluted pitcher; when bored, they are strung like beads, and by the natives put round the necks of their children, to prevent evil. The nuts only of *Nageia Putranjiva* are employed in the same manner, and for the same end.

Young shoots smooth and straight. *Leaves* alternate, short-petioled, from lanceolar to oblong-serrate, acuminate, smooth, texture hard, and in drying turn yellow; from four to six inches long and one and a half broad. *Stipules* none. *Spikes* axillary, solitary, compound, I may say panicled, scarcely half the length of the leaves, smooth. *Flowers* numerous, sessile, small, scattered, yellow. *Bractes* three, roundish, concave and ciliate, embracing

the base of each germ, like a calycle. *Calyx* superior, five-parted, the five oblong segments being only slightly united at the base into one ring with the insertion of the filaments. *Filaments* about forty, twice the length of the corol. *Anthers* two-lobed. *Germ* inferior, three-celled, with three or four *ovula* in each, attached to the axis. *Style* the length of the filaments. *Stigma* large and perforated. *Drupes* the size of a pea, short, urceolate, torose, about twelve-ribbed, olive-coloured. *Nut* conform to the whole drupe, thick and hard, one-celled, cell annular, &c. conformable to the cell in the nut. *Integument* single. *Perisperm* conform to the seed, oily. *Embryo* shorter than the perisperm, arched. *Cotyledons* semi-columnar. *Radicle* cylindric, much longer than the cotyledons.

3. S. *ferruginea. Roxb.*

Leaves lanceolar, serrulate, acuminate, parallel-veined, downy underneath. *Spikes* axillary, solitary, compound, downy.

Foolinazur is the vernacular name in the Garo country, where it is indigenous; it grows to the size of a small tree, with much soft, ferruginous pubes. Flowering time the latter part of the rains.

Leaves alternate, short, villous, petioled, lanceolar, serrulate, acuminate, texture hard; smooth above, downy underneath; from four to seven inches long, and from one to two broad. *Stipules* none. *Spikes* axillary, solitary, compound, not half the length of the leaves, very downy. *Flowers* sessile, crowded, middle-sized, yellow. *Bractes* three to each flower, like a calycle, broad ovate, downy. *Corol* rotate. *Tube* very short; *segments* of the border five, oblong. *Filaments* numerous, inserted on the sharp tube of the corol. *Anthers* two-lobed. *Germ* semi-inferior, downy, three-celled; cells with from two to four *ovula* in each, attached to the upper end of the axis. *Style* the length of the stamina. *Stigma* three-lobed.

MIMOSA. Schreb. gen. n. 1595.

GEN. CHAR. Aggregate. *Calyx* five-toothed. *Corollets* one, diadelphous *legume.* I call them *corollets* because inclined to consider the whole as one *aggregate* flower.

SECT. I. *unarmed Spikes globular.*

1. M. *Kœringa. R.*

Leaves conjugate-pinnate; *leaflets* three pair, short, petiolate, lanceolate, when young highly coloured. *Panicles* axillary, and lateral. *Legumes* many-jointed, spiral; *seed* enveloped in an edible fleshy arill.

A large unarmed tree, a native of the peninsula of Malacca, where it is called *Kœringa* by the Malays. The legumes are very large and spiral, like a cork screw; the joints are nearly circular, compressed, and often two inches in diameter; each containing a single seed, as large as a common garden bean, covered with a considerable quantity of edible fleshy pulp.

2. M. *Xylocarpa. R. Corom. pl.* 1. *N.* 100.

Leaves conjugate pinnate; *leaflets* from two to four pair, with a single one on each side below the pairs. *Stipules* lanceolate. *Spikes* axillary, round, long-peduncled; *corollets* deciduous. *Legumes* falcate, ligneous, many-seeded.

Acacia *xylocarpa. Willd.* 4. *p.* 1055.

Teling. Konda-tangeroo.

It is called Pingadoo in Pegu, where it is used for knees, crooked timbers, &c. in ship building.

A large stately timber tree; a native of various parts of India. It blossoms during the hot season, at which period it is nearly destitute of foliage. The timber is remarkably strong and durable.

3. M. *lucida. R.*

Leaves bipinnate, and conjugate-pinnate; *pinnæ* one or two pair; *leaflets* from one to three pair, oblong, lucid. *Spikes* terminal, sub-panicled, round; *corollets* from ten to twelve, monadelphous.

A large and beautiful tree, a native of the mountains north east of Bengal. Flowering time the hot season.

4. M. *monadelpha. R.*

Leaves bipinnate; *pinnæ* and *leaflets* about two pair of each, the latter obliquely oblong and smooth. *Panicles* terminal. *Tube* of the numerous united filaments very long. *Legume* pedicelled, one or two-seeded. *Nut* black uncertain.

5. M. *Sirissa. R.*

Arboreous. *Leaves* bipinnate, *pinnæ* from two to three pair. *Spikes* axillary, round; corollets monadelphous. *Segments* leafy, dry, long-linear and broad, not opening spontaneously.

Sirisha, or Shirish in Sanscrit and Bengalee.

Teling. Durshuna.

This tree is very common in every part of India; all soils and situations seem to please it equally. It grows to be a pretty large tree, but with a short thick trunk covered with ash-coloured bark. It has a very extensive but thin head. Flowering time the hot and rainy season; the greatest part of its leaves drop during the cold season.

Leaves about the ends of the branchlets bipinnate, and about a span long. *Pinnæ* from two to four pair, sometimes the lower pairs are somewhat alternate. *Leaflets* opposite, from four to eight pair, obliquely linear-oblong, slightly emarginate, otherwise entire, smooth, about an inch and a half long and three-fourths broad. *Petioles common*, round, tapering, with a large gland.

a little above its base on the upper side, and sometimes one at the extremity; there are also two small glands near the base of the partial petioles, and smaller ones between the leaflets, but their presence and number is always uncertain, except those near the base. *Peduncles* axillary, one, two, or more, each supporting a globular head, of white, fragrant corollets. *Filaments* numerous, united below, monadelphous, very long. *Legume* leafy, from six to twelve inches long, and from one to two broad. *Seeds* from eight to ten, remote, lodged in the middle, where the legume is alternately elevated and depressed.

The wood of this tree, is much like that of *M. Xylocarpa*, and equally serviceable. The flowers are very fragrant. I have often seen large masses of very pure gum upon it.

6. M. *heterophylla. R.*

Arboreous. *Leaves* bipinnate, *pinnæ* from two to three pairs; *leaflets* from three to six pairs, varying in shape from unequally round-cordate to lanceolar. *Panicles* axillary; *corollets* pedicelled, monadelphous. *Legumes* entire, spirally twisted, into one or more circles.

Kawahurunee the vernacular name in Silhet, where it grows to be a large and useful timber tree. It flowers in February, March, and April; its seed ripens in May or June.

Young shoots angular and smooth. *Leaves* alternate, bipinnate, from six to twelve inches long. *Pinnæ* from two to three pairs. *Leaflets* from two to three pairs on the lower pinnæ, from five to six the exterior; the inferior pairs small, say from half an inch to an inch each way, and unequally cordate: the exterior pairs from four to five inches long, and one and half broad; all are firm, entire, and glossy. *Petioles, common* and *partial*, smooth. *Glands*, a large umbilicate one at the base of the common petioles and one between each pair of pinnæ and

leaflets. *Panicles* axillary, crowded; *divisions* umbelled even to the globular heads of corollets. *Calyx* five-toothed. *Corol* tubular, four times longer than the calyx; mouth five parted. *Filaments* many, twice the length of the corol, united toward the base, and inserted on the bottom of the tube of the corol. *Anthers* oval, incumbent. *Germ* pedicelled, lanceolar. *Style* the length of the stamina. *Legume* entire, not articulate, contracted between the seeds, spirally twisted into one or more circles, smooth and brown on the outside, orange on the inside. *Seeds* from six to eight, remote, of the size of a kidney-bean, smooth, deep black.

7. M. *trapezifolia. R.*

Leaves bipinnate; *pinnæ* from three to four pairs; *leaflets* from four to seven pairs, trapeziform, downy underneath. *Panicles* terminal, ultimate divisions three; composed of small umbellets of spherical heads of monadelphous corollets.

A native of the Molucca Islands; it is the only species I know, that bears its flowers in umbellets.

8. M. *odoratissima. R. Corom. pl. 2. No. 20.*

Leaves bipinnate; *pinnæ* from three to four pairs; *leaflets* ten pairs; *panicle* terminal; spikes round; *corollets* monadelphous. Legumes thin, linear.

Acacia odoratissima. *Willd. 4. p. 1063.*

Teling. Shinduga.

Tam. Solomanim.

A native of Coromandel. It flowers during the hot season, the tree is large and handsome, the timber particularly hard and strong. *Flowers* with a *gland* considerably above the base of the petiole.

9. M. *elata. Roxb.*

Arboreous. *Leaves* bipinnate; *pinnæ*, from three to five

pairs, *leaflets* from six to ten pairs, oblong, a concave gland on the base of the petiole. *Panicle* axillary, compound. *Spikelets* globular. *Stamens* monadelphous. *Legumes* linear, thin, from six to eight seeded.

A large, tall, most stately and excellent timber tree, a native of the interior parts of Bengal. In the Botanic garden at Calcutta it blossoms at the close of the rains, and the seed ripens during the dry season.

Trunk of trees sixteen or seventeen years old, from twenty-five to thirty feet to the branches, and from four to five feet in circumference, four feet about the ground. *Bark* in the above trees still smooth; but in old trees it is cracked in various directions, and of a dark ash colour. *Branches* spreading to a great extent; *young shoots* flexuose and smooth, the whole height of the just mentioned young trees is from fifty to seventy feet.

Leaves bipinnate, from one to three feet long; *pinnæ* from three to six pairs; four is the most common. *Leaflets* from six to ten pairs, subsessile, opposite, oblong, emarginate, smooth on both sides, from one to two inches long. Petioles with a ridge on the upper side, and one large, oblong, concave, brown gland near the base of the common one, and generally one between or rather below the last one, two, or three pairs of leaflets. *Racemes* or *panicles* axillary, generally compound, being composed of several diverging, pedicelled, globular heads of white corollets. *Calyx* subcylindric, five-toothed. *Corol* funnel-shaped, five-cleft, twice the length of the calyx. *Stamens* numerous, monadelphous, twice the length of the corol. *Germ* oblong. *Style* rather longer than the stamens. *Stigma* minute. *Legume* linear, pointed, smooth, thin (leafy) six inches long and scarcely one broad. *Seeds* from six to eight.

10. M. *Kalkora. R.*

Arboreous. *Leaves* bipinnate; *pinnæ* from four to six

pairs; *leaflets* from fifteen to thirty pairs, sublinear, smooth; there is a smooth, convex gland on the base of the common petiole, and one at the last pair of pinnæ.

Beng. Kalkora.

A large timber tree; a native of the hills in the vicinity of Gwalpara, and from thence brought to the Botanic garden by Mr. R. Kyd.

11. M. *procera. R. Corom. pl.* 2. *No.* 21.

Leaves bipinnate; *pinnæ* four pairs; *leaflets* ten pairs; *stipules* ensiform. *Panicles* terminal and axillary. *Spikes* thereof round; *corollets* monadelphous. *Legumes* linear-lanceolate, pointed.

Acacia procera. *Willd.* 4. *p.* 1063.

Teling. Pedda-Patseroo.

A native of Coromandel, where it grows to be one of their largest trees.

12. M. *pulchella. R.*

Arboreous. *Leaves* bipinnate; *pinnæ* from nine to ten-pairs; *leaflets* from twenty to twenty-five pairs, linear-oblong, glaucous; there is a gland above the base of the common petiole. *Stipules* subulate.

A most beautiful, stately tree, with an immensely large, dense head, the larger branches spread much and the smaller droop, but what renders it most conspicuous is the dark bluish grey colour of its numerous large leaves.

It is a native of Malabar, and from thence was sent to the Botanic garden at Calcutta by Dr. A. Berry.

13. M. *amara. R. Corom. pl.* 2. *No.* 122.

Leaves bipinnate; *pinnæ* ten-pair; *leaflets* twenty-pair; *stipules* lanceolate; *spikes* axillary, crowded, peduncled, round; *corollets* monadelphous. *Legumes* thin, linear and broad.

Acacia *amara. Willd.* 4½. 1074.

Teling. Nella renga.
Tam. Shekram.
A middling sized tree, a native of Coromandel.

14. M. *fructicosa. R.*

Shrubby, smooth. *Leaves* bipinnate; *pinnæ* from eight to ten pair; *leaflets* from ten to twenty pair, sub-falcate, minute, a gland toward the base of the common petiole. *Stipules* minute, subulate.

From China it has been introduced into the Botanic garden at Calcutta, under the Chinese name *Tham-yeaong-ton.*

15. M. *stipulacea. R.*

Leaves bipinnate; *pinnæ* from ten to twenty pair; *leaflets* numerous, scymitar-shaped; *stipules* and *bractes* semicordate. *Panicles* terminal; *spikes* pedicelled, globular; *corollets* monodelphous. *Legume* linear, leafy, from six to twelve-seeded.

Beng. Amlooki.

A native of the mountains north of Bengal. It flowers during the hot season, and is probably the largest of the genus; for I have seen a young (say twenty years old) tree which measured thirteen feet in circumference. five feet above ground; one in the Botanic garden, planted by myself was forty-eight and a half inches in circumference four feet above the ground, when only seven years old.

16. M. *microphylla. R.*

Sub-arboreous. *Leaves* bipinnate; *pinnæ* from ten to fifteen pair; *leaflets* from three to five pair, obliquely-linear. *Panicles* terminal; *corollets* monodelphous. *Legumes* thin, few-seeded.

Tetooleeya, the vernacular name in Silhet where it grows to the height of twelve feet. Flowering time, May and June; the seed ripens in March and April.

Young shoots dark brown and scarcely villous. *Leaves* bipinnate, from six to eight inches long, of a bright green colour. *Pinnæ* from ten to fifteen pair. *Leaflets* from thirty to forty pair, minute, obliquely-linear, smooth. *Petioles common* and *partial*, downy. *Panicles* terminal and axillary, villous, composed of globular heads of minute greenish-yellow corollets. *Bractes* subulate, villous. *Calyx* and *Corol* as in the genus, both villous. *Filaments* from ten to twenty, monodelphous. *Germ* long-pedicelled. *Legumes* thin, leafy, smooth, long, broad, obtuse-pointed, from three to six-seeded, from six to eight inches long and rather above one broad. *Seed* oval, flat, smooth, light brown.

With the bark of this tree the mountaineers make an intoxicating liquor which they drink as we do beer; on the Coast of Coromandel the natives distil an ardent spirit from a fermented mixture of the bark of *Mimosa leucophlea*, coarse sugar, and palm-wine.

17. M. *Smithiana. R.*

Arboreous. *Leaves* bipinnate; *pinnæ* from twelve to fifteen pair, *leaflets* thirty pair, semi-lanceolate. *Panicles* terminal; *corollets* monodelphous. *Legumes* thin, linear, from ten to twelve-seeded.

Suris, the vernacular name in Silhet, where it is indigenous, and grows to be a very large tree. Flowering time May, the seed ripens in December.

Young shoots somewhat angular, a little villous, and spotted with light grey dots. *Leaves* alternate, bipinnate, about a foot long, greenish. *Pinnæ* from twelve to eighteen pair. *Leaflets* numerous, from twenty to forty pair, semi-lanceolate, scarcely half an inch long, and about one-fourth of that in breadth. *Petioles common* and *partial*, villous. *Glands* one near the base of the common petiole, and one between each of the last two or three pairs of pinnæ. *Stipules* semicordate, in young luxuriant

plants remarkably large, viz. one inch and a half long and one broad. *Inflorescence* terminal, panicled, and in the exterior axills a single, long-peduncled raceme, all composed of long-pedicelled globular heads of white corollets, the whole downy. *Calyx* and *corol* as in the genus, and both villous. *Filaments* from twelve to fifteen, very long, united toward the base into a tube which is inserted into the bottom of the tube of the corol. *Germ* pedicelled. *Style* as long as the stamina. *Legumes* linear-lanceolar, thin, straight-margined, and smooth, from three to four inches long and rather under one inch in breadth, from ten to twenty-seeded. *Seeds* oval, much flattened, smooth, of a greyish olive-colour.

18. M. *pedunculata. R.*

Arboreous. *Leaves* bipinnate, *pinnæ* from twenty to forty pair, sub-alternate; *leaflets* from sixty to a hundred pair, a pair of umblicated glands on the base of the petiole, and one between each of the last, from four to eight pair. *Spikes* subclavate, *corollets* monodelphous, decandrous.

An elegant tall large tree, a native of the Islands to the eastward of the Bay of Bengal, where it blossoms in May, and the seed ripens in December. The Malays are said to be fond of the seeds, which taste like garlic, and of the mealy matter which surrounds them, as in M. *biglobosa,* to which it is in many respects nearly allied.

19. M. *biglobosa. Jacq. Amer.* 267. *t.* 179. *f.* 87.

Arboreous. *Leaves* bipinnate; *pinnæ* from ten to thirty pair; *leaflets* from twenty to thirty pair, linear, an umblicated gland on the petiole below the lower pair of the pinnæ, and one between each of the last three or five pair. *Panicles* terminal. *Spikes* few, long-peduncled, clavate; *corollets* decandrous, monodelphous. *Legumes* linear, many-seeded, in a mealy pulp.

Beng. Supota.

A native of the forests of Silhet, and its neighbourhood, where it grows to be a large tree, flowering in December, and ripening the seed in April.

Trunk straight, when full grown about two feet in diameter, or six in circumference; *young shoots* villous. *Leaves* scattered, bipinnate, from twelve to twenty-four inches long, from ten to twenty pair; *pinnæ* opposite, from three to six inches long; *leaflets* from twenty-five to fifty pair, linear, lucid, half an inch long. *Petioles common* and *partial*, villous; *glands* an umblicated one under the lower pair of pinnæ, and one between each of the last three, four, or five pair. *Stipules* minute, subulate. *Panicles* terminal, composed of a few, alternate, very long peduncled, large, sub-clavate, pale yellow fragrant spikes, (or flowers.) *Bractes* or scales of the clavate receptacle, solitary under each corollet, spatulate with the apex broad, and villous on the out-side. *Calyx* tubular, mouth cut into five unequal, roundish, villous segments. *Corol* five-parted. *Filaments* ten, united from the middle downwards. *Germ* linear, many-seeded. *Style* the length of the stamina. *Legumes* about a foot long, and an inch and half broad, flat, swelled at the seeds, where a quantity of mealy matter is found to surround each seed; surface smooth, brown when ripe; it can scarcely be called jointed, except when very old. *Seeds* from twelve to twenty, oval, smooth, dark brown.

Note. About the base of the spikes on the sub-cylindrical part, the corollets are generally male-neuter.

20. M. *triquetra. Vahl. Symb.* 3. 102.

Bi-triennial, prostrate. *Leaves* bipinnate: *pinnæ* two pairs; *leaflets* from ten to twelve pair. *Peduncles* axillary, solitary, bracted; *spikes* round, erect; *corollets* five-petalled, decandrous. *Legumes* linear, from four to six-seeded.

Desmanthus *triquetrus. Willd.* 4. 1045.

A small procumbent species, a native of Coromandel. In flower and seed the whole year.

SECT. II. *Unarmed. Spikes cylindric.*

21. M. *natans. Corom. pl.* 2. *N.* 119.

Annual, flowing. *Leaves* bipinnate; *pinnæ* from two to three pairs; *leaflets* ten pairs. *Stipules* obliquely-cordate. *Flowers* axillary, five-celled, decandrous, the lower ones barren. *Legume* falcate, many-seeded.

Desmanthus *natans. Willd.* 4. 1044.

Nitti-todda-vaddi. *Rheed. Mal.* 9. *t.* 20.

Neptunia *oleracea. Lourier. Cochin Ch.* 804.

Beng. Panee-laj*u*k.

Teling. Neeroo tavulupoo, and Nidra-yung.

This species is annual; it is found growing on pools and lakes of sweet water, or where water has stood. Flowering time the wet and cold seasons.

Branches or *stems* round, jointed, flexuous piped, tufts of radical fibres from the joints, between the joints spongy bodies are formed, which prevent the plant from sinking, the roots have not any connection with the earth, except when the water leaves it, and then it soon perishes.

Leaves alternate, bifarious, bipinnate; *pinnæ* two or three pair, opposite. *Leaflets* from eight to twelve pairs minute, smooth, possessing much sensibility, I think next to that of M. *pudica.* *Stipules* cordate, caducous. *Peduncles* axillary, single, longer than the leaves, supporting an oblong head of fertile and neuter florets. *Bractes* solitary, lanceolate, one-flowered. *Fertile flowers* above, decandrous. *Calyx* five-toothed. *Corol* five-petalled. *Legumes* falcate, acute, smooth, from six to eight-seeded, torose. *Neuter flowers* below the fertile ones. *Calyx* and *Corol* as in the genus, but the ten stamens are here ten linear, lanceolate, waved, yellow petals.

Note. It agrees pretty well with Miller's figure of M.

plena, but the East Indian plant wants the bractes on the middle of the peduncles. The flowers are either neuter or hermaphrodite, and the latter have always ten stamens. Plukenet's 4th figure of plate 307 is certainly intended for this plan.

22. M. *adenanthera. R.*

Terminal, erect, smooth. *Leaves* bipinnate; *pinnæ* three pair; *leaflets* from twenty to thirty pair with coloured margins. *Stipules* obliquely cordate, acute. *Peduncles* axillary, bracted; *spikes* ovate, nodding, inferior corollets double, neuter; the superior ones, decandrous; *anthers* crowned with a gland. *Legumes* sub-falcate, many-seeded.

Native place uncertain. Flowering time in Bengal the rainy season. It is a pretty slender, somewhat flexuous, sub-erect, shrubby plant. It is nearly allied to Willdenow's *Desmanthus punctatus;* if the anthers have a gland on the apex, as in *Adenanthera,* I think we may conclude they are the same.

23. M. *scandens. R.*

Scandent. *Leaves* bipinnate, ending in a tendril; *pinnæ* two pair; *leaflets* from three to four pair, oblong, emarginate, glossy. *Spikes* panicled, lateral; *corollets* decandrous. *Legume* jointed, with an entire margin.

Mimo *Entada. Willd.* 4. 1041.

Acacia *scandens. Willd.* 4. 1057.

Perim-kaku-valli. *Rheed. Mal.* 8. *t.* 32. 33. *and* 34.

Entada. *Rheed. Mal.* 9. *t.* 77.

Beng. Gilla.

An immense scandent plant of many years duration; the oldest in the Botanic garden has been there fifteen years, and has not yet blossomed. Flowering time in the forests of Silhet where it is common, March and April; the seed ripens toward the close of the year.

Trunk thick in proportion to the age and soil; in the above mentioned fifteen years old plant in the Botanic garden, it is twenty-four inches in circumference. *Bark* rough, olive grey, and like most of the genus, astringent. *Young shoots* remarkably long, smooth, slender, and shining, and while very young, furrowed. *Leaves* alternate, bipinnate; from six to twelve inches long. *Pinnæ* two pair. *Leaflets* three or four pair, oblong-emarginate, lucid, entire, from one to three inches long. *Petiole common*, ending in a two-cleft, powerful tendril; all are polished, without glands, but channelled. *Stipules* subulate, small, embracing the branchlet. *Spikes* generally from four to eight, on a common peduncle, from the axills of the former leaves, upon the two or three years old branchlets, and there is often more than one such peduncle in the same axill. *Rachis* and the minute bracte clothed with ferruginous pubescence. *Flowers* numerous, small, pale yellow. *Calyx* cup-shaped, five-toothed. *Corol* one-petalled, but divided to very near the base into five lanceolate segments. *Filaments* ten, inserted into the short tube of the corol. *Anthers* two-lobed, with a glandular point between them. *Germ* linear, containing many *ovula*. *Style* the length of the stamina. *Stigma* simple, but large. *Legumes* of an immense size, often several feet in length, and from four to five inches broad, spirally twisted, surrounded with a thick very firm, polished, entire rim, which is found to remain, like a picture frame, when the less durable, jointed body of the legume has disappeared; *joints* from ten to thirty, one-seeded, ligneous, swelled in the centre where the seed is lodged, and more or less transversely furrowed, otherwise pretty smooth, and of a greenish ash colour when ripe. *Seeds* sub-ovate, nearly as large as a pullet's egg. *Integument* single, thick and hard, in fact a powerful, polished, shining, chesnut-coloured nut. *Perisperm* none. *Embryo* straight. *Cotyledons* equal, conform to the seed, amygdaline. *Radicle* patelliform, lodged at the umbilicus of the seed.

SECT. III. *Thorny. Spikes globular.*

24. M. *dulcis. R. Corom. pl.* 1. *N.* 99.

Thorns stipulary. *Leaves* bipinnate; *leaflets* subsemi-elliptic. *Panicles* terminal; *spikes* round, subsessile; *corollets* monodelphous. *Legumes* twisted, turgid, with sweet, firm pulp, and smooth black seeds.

Inga dulcis. Willd. 4. *p.* 1005.

A native of the Philippine Islands. It flowers during the cold season in India, where it grows quickly to be a large beautiful tree, yielding annually abundance of nourishing, edible fruit. The timber is also of a good quality.

25. M. *concordiana. R.*

Arboreous. *Thorns* stipulary. *Leaves* bipinnate; *pinnæ* one or two pair; *leaflets* from three to seven pairs. *Spikes* globular; *corollets* pedicelled, monodelphous. *Legumes* curved, many-jointed, notched on the exterior margin.

A low tree. *Trunk* short, a few feet only, thickness various. *Bark* light ash colour, and scabrous.

Branches numerous, forming a very large spreading head, which is out of all proportion to the trunk; *branchlets* flexuose. *Thorns* often solitary, large, diverging; leaf- and flower-bearing, they then appear as small branchlets, with sharp points; from one line to three inches long. *Leaves* bipinnate; on the young shoots, alternate, on the older parts collected. *Pinnæ* one or two pair, from one to three inches long. *Leaflets* from three to ten pairs, opposite, sessile, linear-oblong, smooth, entire, the exterior largest, and obliquely obovate-oblong, from six to twelve lines long, and about the same breadth. *Petioles common*, short, downy, with an umbilicated gland between each pair of pinnæ, and a short point at the apex. *Peduncles* one or two, axillary, about two inches long, each supporting a globular head of a few,

white, subpedicelled corollets. *Calyx* and *Corol* five-parted. *Filaments* numerous, monodelphous. *Legume* large, articulate, compressed, much curved, often forming a circle, or more, as in M. *dulcis*, hard, dark brown or blackish, a little scabrous. *Seeds* round, compressed, smooth, brown.

Note. It ought to be compared with Vahl's M. *nitida*. I think his description agrees tolerably well with this plant, except in the stamina, his being polyandrous, mine most perfectly monodelphous, but if Willdenow is correct in his definition of the *legume* in his genus *Acacia*, this plant, which has a most perfectly articulate legume, cannot be his *Acacia nitida*. *ed. sp.* 4. 1086. the only species observed by me, which it resembles. Vahl is silent about the legume.

26. M. *Farnesiana. Linn. Syst. Veg. ed.* 4. *p.* 916.

Shrubby. *Thorns* stipulary. *Leaves* bipinnate; *pinnæ* from four to five pairs: *leaflets* from ten to fifteen pairs. *Spikes* axillary, long-peduncled, round; *corollets* polyandrous. *Legumes* turgid, with two rows of seeds enclosed in pulp.

Acacia *farnesiana. Willd.* 4. *p.* 1083.

Teling. Kustoori, or Piktoomee.

Sans. Urimeda. Vitkhira.

Beng. Gooya-babula.

Sami. *Asiat. Res.* 4. *p.* 307, is this plant, though the specimens of the *Sami* tree sent to me by Capt. Wilford, belong to my *Adenanthera aculeata*. See *Prosopis aculeata. Asiat. Res.* 4. *p.* 405.

A native of every part of India. It flowers in the cold season.

27. M. *arabica. Lamarck. Encyclop.* 1. 19. *R. Corom. Pl.* 2. *N.* 149.

Thorns stipulary. *Leaves* bipinnate; *pinnæ* five pairs;

leaflets fifteen pairs. *Spikes* axillary, round; *corollets* polyandrous. *Legumes* pedicelled.

Burbura the Sanscrit name.

Acacia *arabica. Willd.* 4. *p.* 1085.

Teling. Nella-tooma.

Beng. Babool or babula.

Very common all over India, flowering and ripening its seed at various times of the year.

28. M. *eburnea. R. Corom. pl.* 2. *N.* 199.

Shrubby. *Thorns* stipulary, often longer than the leaves, and united at the base. *Leaves* bipinnate; *pinnæ* six pair; *leaflets* nine pair. *Spikes* axillary, round; *corollets* polyandrous. *Legumes* linear, and variously bent.

Acacia *eburnea. Willd.* 4. *p.* 1081.

A native of Coromandel, where it flowers during the cold season.

29. M. *lencophlea. R. Corom. pl.* 2. *N.* 150.

Thorns stipulary. *Leaves* bipinnate; *pinnæ* ten pair; *leaflets* twenty-five pair. *Panicles* terminal, spikes round; *corollets* polyandrous. *Legume*, long, linear, curved.

Teling. Tella-tooma.

Acacia *lencophlea. Willd.* 4. *p.* 1083.

A native of Coromandel. It flowers during the rainy season.

30. M. *tomentosa. R.*

Arboreous; tender parts tomentose. *Thorns* stipulary. *Leaves* bipinnate; *pinnæ* from ten to twelve; *leaflets* twenty pair, downy. *Spikes* globular, peduncled, axillary, single or paired; *corollets* polyandrous. *Legume* compressed, falcate.

Acacia *tomentosa. Willd.* 4. 1089.

Beng. Sain babul.

Tam. Kodi-velo.

This I have met with in Bengal, in the state of a small tree, but it appears as if it would be large if permitted to remain. Flowering time the beginning of the cold season; *young shoots* downy.

Thorns stipulary, straight, divaricate, about an inch long, very strong and sharp, when young downy. *Leaves* bipinnate; *pinnæ* ten or twelve pair. *Leaflets* from fifteen to thirty pairs, very minute, downy. *Petioles* common and partial, downy, with an umbilicated gland or two between the last pair or two of pinnæ, and an oblong one below the lower pair. *Spikes* axillary, globular, white, peduncled, one, rarely two, together, small, rather offensive. *Peduncles* pretty long, and bracted at the middle. *Legume* linear, compressed, falcate; from six to eight-seeded.

SECT. IV. *Thorny. Spikes cylindric.*

31. M. *dumosa. R.*

Shrubby, very ramous. *Thorns* stipulary, somewhat recurved; *pinnæ* from two to four pairs; *leaflets* four or five pairs, oval, minute.

A small, very bushy tree, or large shrub of uncommon beauty, a native of the country immediately west of Delhi; its leaves are minute, and of a greyish colour.

32. M. *latronum. Linn. Suppl.* 4. 38.

Subarboreous. *Thorns* stipulary, united at the base, often dreadfully large. *Leaves* bipinnate, *pinnæ* four pair; *leaflets* about ten pair. *Spikes* axillary, peduncled, subcylindric; *corollets* polyandrous. *Legume* thin, broad-falcate, three or four-seeded.

Teling. Pukee-tooma.

Acacia *latronum. Willd.* 4. 1077.

A native of the coast of Coromandel, where it blossoms about the beginning of the hot season. It is a small

tree, or large ramous shrub, with numerous, interwoven, flexuose branches, covered with a dark brown bark, dotted with white.

Spines united at the base, often very large, round, tapering to an acute, hard, brown point, the rest white, and smooth, particularly when young. Inwardly hollow, and the habitation of ants. From the fork, where the two unite, often a small branchlet, or leaf issues. *Leaves* bipinnate, in the young growing shoots they are solitary, from the fork of the spines all over the older branches several are frequently found together. *Pinnæ* from three to five pair, opposite and rarely an inch long. *Leaflets* from ten to twelve pair, minute, smooth. *Petioles common*, acute, pointed, with a gland on the upper side a little below the first pair of pinnæ. *Stipules* no other than the spines. *Peduncles* generally in pairs, from the axills of the spines, and mixed with leaves, short. *Spikes* cylindric, about as long as the leaves. *Flowers* polyandrous, rather remote, fragrant, pure white when they first expand, but becoming yellow. *Calyx* minute, from four to five-toothed. *Corol* three or four times longer than the calyx, from four to five-cleft. *Stamens* numerous, distinct. *Germ* obliquely oval. *Style* crooked, as long as the stamens. *Legume* thin, broad-falcate, three or four-seeded.

33. M. *fera. Lour. Cochin Ch.* 801.

Thorns solitary, often much branched. *Leaves* bipinnate and pinnate; when bipinnate the *pinnæ* are from four to eight pairs; *leaflets* sub-alternate, from six to ten pairs. *Spikes* axillary, cylindric; *Corollets* with from five to ten stamina. *Legumes* long, linear, variously bent.

Gleditsia *horrida. Willd.* 4. 1098.

A native of China and Cochin China; young trees reared in the Botanic garden at Calcutta, from seeds of *Gleditshia triacanthos* received from America, do not in any respect differ from our China plant, which is

evidently a *Mimosa*, and most likely Loureior's *fera*. It is a tree of very slow growth, and the wood particularly hard. Trees in this garden about twenty-five years old are not above twenty-five feet high, with slender, crooked, poor-looking trunks.

34. M. *cinerea. R. Corom. pl.* 9. *N.* 174.

Subarboreous. *Thorns* solitary; *leaves* bipinnate; *pinnæ* from eight to nine pair; *leaflets* fifteen pairs. *Spikes* axillary, subcylindric; *corollets* decandrous, the lower ones sterile.

Desmanthus *cinereous. Willd.* 4. *p.* 1048.

Teling. or Yellow.

Tam. Warfataro.

A native of Coromandel. The spikes of this plant are large, droop much, and are particularly elegant.

SECT. V. *Prickly. Spikes cylindric.*

35. M. *obovata. R.*

Arboreous, armed with stipulary, recurved prickles. *Leaves* bipinnate; *pinnæ* about three pairs; *leaflets* about four pairs, obovate. *Spikes* cylindric, axillary. *Legumes* linear, oblong, leafy.

A native of Rohilcund, where it blossoms in March.

36. M. *ferruginea. R.*

Arboreous. *Prickles* sitpulary. *Leaves* bipinnate; *pinnæ* from four to six pairs; *leaflets* from ten to twenty pairs. *Spikes* axillary, cylindric; *corollets* monadelphous. *Legumes* leafy, from five to six-seeded.

Teling. Woanee.

This species I cannot well reduce to any of those mentioned in the works of Linnæus. It is a native of the mountainous parts of the country, where it grows to be a pretty large tree. *Bark* deeply cracked, of a dark, rusty colour, and strongly astringent.

Thorns stipulary, recurved, strong, short and very sharp, they are not always present. *Leaves* alternate, bipinnate, from two to three inches long. *Pinnæ* from three to six pair, opposite, one or one and a half inch long. *Leaflets* from eight to twelve pair, linear oblong, smooth, small. *Petioles* common, now and then armed with a few small prickles on the under side. *Peduncles* axillary, from one to three, and about the extremities of the branchlets, short, each ending in an erect, cylindrical spike of pale yellow corollets. *Filaments* many, conjoined into a tube near the base. *Legumes* membranaceous, rust-coloured, about six inches long, and one broad. *Seeds* from five to seven.

37. M. *catechuoides. R.*

Arboreous. *Bark* dark brown. *Prickles* stipulary. *Leaves* bipinnate; *pinnæ* from ten to fifteen pair; *leaflets* from thirty to forty pair. *Spikes* axillary, from one to three, cylindric; *corollets* monadelphous. *Legumes* linear, thin.

38. M. *Catechu. R. Corom. Pl.* 2. *N.* 174.

A mistake I was not aware of till I found the real M. *Catechu* in Bengal.

Teling. Podol Maun.

A pretty large tree, a native of Coromandel and Bengal.

39. M. *Sundra. R. Corom. pl.* 3. *No.* 225.

Arboreous. *Bark* dark brown. *Prickles* stipulary, recurved, with decurrent base. *Leaves* bipinnate; *pinnæ* fifteen pair; *leaflets* from twenty to forty pair. *Spikes* axillary, from one to two, cylindric; *corollets* monadelphous. *Legumes* lanceolate, thin, two or three-seeded.

Acacia *Chundra. Willd.* 4. *p.* 1079.

Teling. Sundra.

A native of Coromandel. It flowers in July and August.

40. M. *Suma. R.*

Arboreous, with remarkably white bark, twigs villous. *Prickles* stipulary, broad-based, straight. *Leaves* bipinnate; *pinnæ* from ten to twenty pair; *leaflets* fifty pair. *Spikes* (from one to six) axillary, cylindric; *corollets* polyandrous. *Bractes* lanceolate. *Legume* linear, thin, from six to eight-seeded.

Acacia *polycantha. Willd.* 4. *p.* 1099.

Sans. Shumee.

Beng. Sai-kanta.

A very common tree about Calcutta, and over Bengal, and is remarkably conspicuous on account of its white bark. Flowering time the rainy season. There is a large concave gland above the base of the petiole, and two or three between the last two or three pairs of pinnæ.

41. M. *Catechu. Linn. suppl.* 439.

Arboreous. *Bark* dark brown, armed with most acute, stipulary, recurved aculei. *Leaves* bipinnate; *pinnæ* from ten to thirty pair; *leaflets* as far as fifty pair; *petioles* armed. *Spikes* axillary, cylindric. *Bractes* from lanceolate to triangular; *Corollets* polyandrous. *Legume* brittle, linear, thin, from six to eight-seeded.

Acacia *Catechu. Willd.* 4. *p.* 1079.

42. M. *Catechu. Medical observ. v.* 5. *p.* 151. *t.* 4.

Beng. Khira.

Khadira in Sanscrit and Kudhir the name of the extracts.

The last five species are nearly allied to each other, and require no small degree of attention to point out their differences in a short definition. Probably they are equally fit for yielding the extract now called Catechu. Flower-

ing time the hot and rainy seasons. The seed ripens after the rains.

SECT. VI. *Prickly. Spikes globular.*

43. M. *pudica. Willd.* 4. 10. 31.

Perennial, diffuse, aculeate. *Leaves* digitate, pinnate; *pinnæ* about four; *leaflets* many; *corollets* pentandrous.

Beng. Lajuk.

Native place uncertain, but common in gardens throughout India.

44. M. *mutabilis. R.*

Shrubby, scandent, armed with remote recurved prickles. *Leaves* bipinnate; *pinnæ* four pair; *leaflets* from four to eight pairs. *Spikes* panicled, round; *corollets* octandrous. *Legume* curved, three jointed, with a prickly margin.

A native of the banks of the Ganges near Benares, and particularly conspicuous on account of its numerous flowers, which appear during the rains; they are of a bright lively purple when they first expand, but become white by age, the reverse of the greater part of our Indian changeable flowers which generally acquire colour by age.

45. M. *octandra. R. Corom. pl.* 2. *No.* 200.

Shrubby, scandent, prickles scattered. *Leaves* bipinnate; *pinnæ* from three to six pair; *leaflets* eight pair. *Spikes* panicled round; *corollets* octandrous.

Teling. Wallag-doora, or Poota; with prickly, jointed margins, Korinta.

M. *rubicaulis. Willd.* 4. *p.* 1038.

Beng. Shai-kanta.

A native of the warmer parts of Asia, and like the last blossoming in the rains, and the flowers changing their colour in the same manner; I doubt if they are sufficiently removed from each other to make distinct species.

46. M. *Intsia. sp. pl.* 1508.

Shrubby, scandent, prickles scattered. *Leaves* bipinnate; *pinnæ* four or five pair; *leaflets* about nine pair, shining, glands, one near the base of the petiole, and an obconical one between each pair of pinnæ. *Stipules* narrow, cordate. *Spikes* panicled, round; *corollets* polyandrous. *Legumes* leafy, linear.

Teling. Korinta.

Intsia. Rheed. Hort. Mal. 6. *t.* 4.

Acacia Intsia. Willd. 4. *p.* 1091.

A large rambling plant, common in forests all over Coromandel.

47. M. *concina. Willd.* 4. *p.* 1039.

Subarboreous, climbing, prickles numerous. *Leaves* bipinnate; *pinnæ* from four to eight pair; *leaflets* from ten to twenty pair. *Stipules* and *bractes* obliquely semicordate. *Spikes* axillary, crowded, round; *corollets* polyandrous. *Legumes* fleshy, scarcely jointed.

Teling. Chicaee.

Beng. Bun-reetha.

A considerable trade is carried on, in some parts of India, with the saponaceous legumes of this species. The plant is common in most forests, and blossoms during the rains in Bengal.

48. M. *cæsia. sp. pl.* 1507.

Shrubby, scandent, armed with numerous recurved prickles. *Leaves* bipinnate; *pinnæ* about eight pair; *corollets* polyandrous. *Legumes* leafy, linear.

Acacia *cæsia. Willd.* 4. *p.* 1090.

Teling. Konda Korinta.

A native of Coromandel.

49. M. *pennata. sp. pl.* 1507.

Arboreous, with long scandent branches, armed with

recurved aculei, none of which are stipulary. *Leaves* bipinnate; *pinnæ* from twelve to fourteen pair; *leaflets* about forty pairs. *Panicles* terminal; *spikes* globular, *corollet* polyandrous.

Hind. Biswool.

Acacia *pennata. Willd.* 4. *p.* 1090.

Acacia *aculeata. Burm. Zeyl.* 2. 11.

A native of Hindoostan of the Ballo and Payen Ghaut mountains. Flowering time the month of October; the seed ripens in March and April.

50. M. *torta. R.*

Sub-arboreous, with scandent branches, armed with recurved prickles. *Leaves* bipinnate; *pinnæ* as many as thirteen pair; *leaflets* as many as forty pair; *petioles* with a large oblique conic gland at the base, and between each of the last half of the pinnæ. *Racemes* terminal; *spikes* globular, *corollets* polyandrous. *Legumes* leafy, from six to ten-seeded.

A native of the mountains of Coromandel. In those prickly, scandent, species, the small lateral branchlets twist round whatever they meet with and give powerful spuport to the whole plant, after having taken a turn or two their length extends, &c. like the other branches.

CAPPARIS. Schreb. gen. n. 876.

Gen. char. *Calyx* four-leaved. *Corol* four-petalled. *Stamina* long. *Germ* pedicelled, one-celled; *ovula* numerous, attachment parietal. *Berry* pedicelled, one-celled, many-seeded. *Embryo* spiral, no perisperm.

1. C. *acuminata. Willd.* 2. 1131.

Shrubby, armed with stipulary, straight thorns. *Leaves* from broad-lanceolate to cordate-acuminate, smooth; *peduncles* solitary, one-flowered. *Berries* obovate.

Beng. Kaloo-kera.

Teling. Palikee.

A middle sized, or rather a low, scraggy, ramous shrub, growing common on dry, barren, rocky, or stony ground. It flowers about the end of the cold season.

Young shoots of a bluish purple colour, and covered with a little white dust. *Thorns* stipulary, straight, short. *Leaves* alternate, short-petioled, from broad-lanceolate to oval, firm, smooth; *margins* somewhat scabrous, and for the most part ending in a small, hard, sharp point; about two inches long, and one and a half broad. *Peduncles* axillary, solitary, one-flowered, nearly as long as the leaves. *Flowers* pretty large, the two upper petals tinged yellow. *Anthers* blue. *Germ* long-peduncled, oblong, hairy, one-celled with four partitions projecting from the opposite sides of the walls to near the centre, but not meeting. *Ovula* numerous, attached in two vertical rows to each angle formed by the partial partitions and the seeds on the germ. *Berry* sub-rotund, size of a pigeon's egg, pretty smooth, soft, and when ripe red, one-celled. *Seeds* many, scattered in soft fœtid white pulp, beaked, reniform. *Integuments* four: the *exterior* one ash-coloured and membranaceous; the *second*, thick, brown, tolerably hard, two-valved; the *third*, a thin white membrane lining the second, or shell; and the *fourth*, membranaceous and attached to the seed. *Perisperm* no other than the fourth or inner integument of the seed. *Embryo* spirally rolled up. *Cotyledons* two-folded, petioled, ovate, veined. *Radicle* three or four times larger than the cotyledons, spirally rolled up with its thick point to the umbilicus.

2. C. *Zeylanica. Willd.* 2. *p.* 1132.

Shrubby, climbing; *young shoots* ferruginous, armed with stipulary recurved thorns. *Leaves* long, oval, acuminate. *Peduncles* one, two, or three, above the axills,

one-flowered. *Petals* ciliate, shorter than the stamina; *berries* obovate obtusely four-sided.

T'eling. Adonda.

This species is readily known, by the tender shoots, leaves, and calyces being covered with much rust-coloured pubescence, by there being often three flowers in the axill, and by the petals being much shorter than the stamina, and ciliate, and lastly by the germ being nearly round.

3. *C. subspinosa. R.*

Scandent, armed with minute, stipulary thorns. *Leaves* linear-oblong, acute. *Racemes* corymbiform, axillary, and terminal; the whole forming a leafy panicle. *Corols* almost regular.

A native of the Moluccas.

4. C. *sepiaria. Willd.* 2. 1132.

Shrubby; *stipules* thorny. *Leaves* oval. *Umbels* terminal. *Corols* irregular. *Berries* one-seeded.

Beng. Kanta-goor-kamaee.

Teling. Nella puee.

A middle sized very ramous, strong shrub, common in hedges, for which it is a most excellent plant.

Trunk scarcely any. *Branches* numerous, winding, very stiff. *Prickles* stipulary, recurved, very strong and sharp. *Leaves* alternate, short-petioled, oval, emarginate, smooth; about one inch and a quarter long and three quarters of an inch broad. *Umbellets* simple, terminal, globular, many-, and one-flowered. *Flowers* small white. *Calyx* unequal. *Petioles* unequal, ascending on one side. *Filaments* ascending on the other. *Berry* the size of a small cherry, smooth, black, one-seeded.

5. C. *bisperma. R.*

Arboreous; *stipules* thorny, recurved. *Leaves* oval,

obtuse. *Racemes* terminal, corymbed. *Corols* irregular. *Berries* globular, two-seeded.

Teling. Goolee.

A timber tree, a native of the extensive forests amongst the mountains.

Trunk thick, tolerably erect, but of no great height. *Branches* numerous, spreading in every direction. *Thorns* stipulary, recurved, small, frequently wanting. *Leaves* alternate, short-petioled, oval, obtuse or slightly emarginate, smooth; about two inches long, and one and a half broad. *Racemes* terminal, corymbiform. *Calyx* four-leaved, unequal. *Petals* four, oblong, waved, unequal, ascending, placed on the upper side, inserted into the insterstices of the calyx by short claws. *Filaments* numerous, ascending on the under side opposite to the petals. *Berry* the size of a nutmeg. *Seeds* two, kidney-formed.

Note. This differs from C. *Grandis* of Dr. König in having thorns, and obtuse, or emarginate leaves. Can soil and situation cause the difference?

The wood is heavy, hard and durable, the natives employ it for various uses.

6. C. *corymbosa. R.*

Shrubby, climbing, armed with stipulary, recurved prickles. *Leaves* long, obovate; *corymbs* terminal. *Corol* irregular. *Berries* globular.

Teling. Aguba.

A large climbing shrub, a native of hedges and forests.

Branches twiggy. *Prickles* stipulary, recurved. *Leaves* alternate, remote, short-petioled, oblong-ovate, obtuse, smooth, shining, entire, about two inches long and one broad. *Racemes* corymbiform, terminal. *Flowers* large, very beautiful, white, slightly tinged with yellow. *Fruit* the size of a pullet's egg, globular, smooth, when ripe of a beautiful dark purple.

7. C. *heteroclita. R.*

Shrubby, climbing, unarmed. *Leaves* elliptic; *Corymbs* terminal. *Calyx* four-cleft. *Corol* regular. *Stamina* on the receptacles. *Berries* long, compound.

Teling. Putta tiga.

A large unarmed climbing shrub, a native of the most unfrequented and inaccessible woody parts of the Circar mountains. It flowers during the cold season.

Trunk and *branches* climbing. *Bark* of the old ligneous parts brown, and rough; of the young, round shoots, smooth and green. *Leaves* alternate, petioled, oval, entire, smooth on both sides; from one to two inches long, and from half an inch to an inch broad. *Flowers* pretty large, pale greenish white, terminal, forming small corymbs, of from four to eight on pretty long round, smooth peduncles. *Bractes* minute, one under the base of each peduncle. *Calyx* one-leaved. *Tube* short, campanulate, four-sided. *Border* four-parted; *divisions* broad-lanceolate, acute, entire, smooth. *Corol* four-petalled. *Petals* inserted into the calyx over the fissures, equal, lanceolate, waved, acute, about half the length of the calyx. *Filaments* many, longer than the calyx, inserted on a clavate receptacle, which is as long as the tube of the calyx. *Anthers* oval. *Germ* elevated on a long, slender style-like pedicel, even with the anthers, oblong, two-celled, each containing two vertical rows of ovula, attached to the partition. In what I consider the real species of *Capparis,* the receptacles are *parietal,* here septal. *Style* none. *Stigma* large, rather rough, and convex. *Pericarp* a long, compound, pendulous, berry, or rather four rows of berries, affixed along a receptacle: the whole is from two to five inches long, singly they are about the size of a cherry, covered with a thin, dry bark. *Seeds* only one in each single berry, or lobe of the compound fruit.

Note. I should imagine this, with several of Jacquin's

species, will form a new genus, the short turbinate receptacle is exactly like that of *Grewia*.

The unripe fruits are boiled, and eaten by the natives.

8. C. *trifoliata*. *R.*

Arboreous, unarmed. *Leaves* terminal. *Corol* irregular. *Berry* spherical.

Crateva religiosa. *Willd*. 2. 853.

Nurvala. *Rheed*. *Mal*. 3. *t*. 42.

Sans. Vuroona, also Tikta-shaka.

Beng. Buroon.

Teling. Tella woollee mera.

Common every where throughout India, it flowers about the beginning of the hot season.

PAPAVER.

Calyx, two-leaved. *Corol* four-petalled. *Capsule* superior, one-celled, crowned by the permanent, dehiscent stigma.

P. *somniferum*. *Willd*. 2. 1147.

Calyx and *capsule* smooth. *Leaves* stem-clasping, garbed.

Beng. Post; and Afin, the opium.

Pers. Kooknar.

Arab. Khus kash.

The large single, white flowered variety, with white seed, is extensively cultivated in many parts of India.

ARGEMONE.

Calyx three-leaved. *Corol* six-petalled. *Capsule* unilocular, opening at the apex; *receptacle* parietal. *Seeds* many.

A. *mexicana*. *Willd*. 2. 1148.

Annual. *Leaves* stem-clasping, spinous. *Capsule* five-valved.

Beng. Bura sheal kanta.

A common weed by road sides, &c. throughout India; it blossoms and ripens its seed during the dry season.

GORDONIA. Schreb. gen. n. 1144.

Gen. Char. *Calyx* five-leaved, or five-cleft. *Petals* five, inserted on the base of the united filaments. *Germ* superior, five-celled; *cells* from two to three-seeded; *attachment* interior. *Capsules* superior, five-celled. *Seeds* winged. *Embryo* inferior, centripetal, with scanty perisperm.

Note. Notwithstanding the union of the ring formed by the filaments, and the *malvaceous* structure of the seed vessel and seed, I am for the present induced to place this genus in the class *Polyandria.*

1. G. *integrifolia. R.*

Arboreous. *Leaves* broad-lanceolar, entire, acuminate. *Peduncles* axillary, solitary, one, two, or three-flowered. *Capsules* spherical.

Hind. Makrisal.

A large timber tree, a native of the hilly tracts on the eastern frontier of Bengal, where it flowers in April and the seed ripens in December.

2. G. *oblata. R.*

Arboreous. *Leaves* broad-lanceolar, serrate, acute, coriaceous. *Peduncles* axillary, solitary, long, one-flowered. *Capsules* oblate spheriodical, with two or more seeds in each cell.

A tree, a native of Pulo Penang, where it was discovered by Dr. William Hunter.

3. G. *decandra. R.*

Leaves oval, entire; *corymbs* axillary, three or four times dichotomous. *Flowers* decandrous. A native of Pulo Penang, where it blossoms in May.

Leaves alternate, petioled, oval, smooth, entire, emarginate, of a firm texture, almost coriaceous, about three inches long and two broad. *Petioles* short, channelled. *Stipules* none. *Corymbs* axillary, as long as the leaves, three or four times dichotomous. *Flowers* numerous, small. *Calyx* five-leaved, leaflets imbricated, ovate, concave, permanent. *Petals* five, obovate, scarcely longer than the calyx, and like it permanent. *Filaments* ten, five or six times longer than the corol, united near the base only, forming a cup round half of the germ, with the pollen round the margin. *Germ* superior, ovate. *Style* as long as the stamens. *Stigma* large, sub-peltate. *Capsule* oblong, of the size of the second point of a man's forefinger, five-celled, five-valved. Each valve has a deep, sharp, longitudinal keel on the inside, half dividing the cells, which are separated by a continuation of the inflected margins of the valves, which unite in the centre and form the receptacle of the seed. *Seeds* two in each cell, separated by the keels of the valves, ending above in a long superior wing, and inserted near its apex into the inner margin of the partitions.

ANNESLEA. R.

GEN. CHAR. *Calyx.* four-leaved. *Corol* many-petalled. *Style* none. *Stigma* concave, peltate, with about six rays. *Germ* inferior, from six to eight-celled; *cells* five-seeded. *Berry* many-seeded. *Seeds* arilled. *Embryo* dicotyledonous, and furnished with both perisperm and vitellus, direction various.

A. *spinosa. R.*

A native of the sweet-water lakes and ponds in the district of Tippera, Chittagong, &c. to the eastward of Cal-

cutta, where it blossoms most part of the year, and is known to the natives of those countries by the name Makana.

Root, consists of numerous, thick, fleshy fibres, which descend deep into the soil at the bottom of the water the plant grows in. *Stem* none. *Leaves* radical, with petioles sufficiently long to admit of their floating on the surface of the water, peltate, from orbicular to oval, entire, having the upper surface dark green, with ferruginous veins, and armed with a few very slender prickles, of a most beautiful purple, underneath and there reticulated with numerous, very large, prominent, dichotomous, finally anastamosing veins, armed with long, straight, very sharp, strong spines; size of the leaf from one to four feet each way. *Petioles* round, and armed with straight spines. *Peduncles* radical, one flowered, round, armed with straight spines; if the water is shallow they are generally so long as to elevate the flower above its surface; but if deep, they blossom under water. *Flowers* small for the size of the plant, colour a lovely blue-violet. *Calyx* four-leaved, inserted on the crown of the germ, armed on the outside with recurved spines, smooth and coloured on the inside. *Corol,* petals about twenty, narrow, ovate-oblong; the exterior ones nearly as large as the *calyx*, gradually lessening till they become very small, and nearly colourless next to the stamina. *Filaments* numerous, and like the petals, lessening towards the centre. *Anthers* oval. *Germ* beneath, ovate, armed, from six to eight-celled, each containing from six to ten seeds attached to the partitions, and to the exterior angles of the cells as in *nymphaea.* *Style* none. *Stigma* cup-shaped, with the margin only slightly marked with six, seven, or eight elevations. *Berry* inferior, nearly round, size of an orange, swelling out in various places by the growth of the seeds within, crowned with some portion of the *calyx* and the rays of the sessile peltate stigma which are from six to eight. *Cells* obscure,

as the partitions become obliterated in the ripe state. *Integuments*, or bark, fleshy, armed with straight, sharp spines not opening into any number of valves, but, as in *Nymphaea* putrifying or crumbling away. *Seeds* nuciform, about twenty, nearly round, each enveloped in a complete, fleshy rose-coloured aril. *Integuments* two, the exterior one or shell nuciform, dark brown, uneven, with a very conspicuous pit near the oblong umbilicus which covers the vitellus; the inner one thin, and light brown. *Perisperm* conform to the seed, of a pure white, amygdaline consistence. *Vitellus* lenticular, penetrating the perisperm about one fourth its diameter, enveloped in its proper thin white integument, which adheres more firmly to the perisperm than to this organ. *Embryo* lodged in the exterior half of the vitellus, and attached to its exterior, elevated point, or dome, oval, with the inner end divided into two equal lobes. The part between these lobes and the apex, or exterior end, which is united to the point of the vitellus, I call the peduncle of the embryo, which lengthens as germination proceeds, and first forces the exterior end, or dome of the vitellus, through the pit in the shell, already mentioned, and there taking a square from, the corners thereof become ragged and blackish. The sheath or thickened integument of the vitellus, which connects this part, lengthens also, and opens in one side to give passage to the two lobes of the embryo; the peduncle continues lengthening, and when from half an inch to an inch in length, the two lobes, now evidently the two *cotyledons*, begin to separate. The exterior one, and yet the largest, takes a simple subulate shape; and the inner, or smaller lobe now advances fast, soon becoming not only the largest, but long-peduncled, and trifid; from the bosom of these the *plumula* advances, and from the base of the petioles of the leaves thereof, and that of the trifid cotyledon the real roots issue, and give sustenance to the little, now independent plant.

The seeds are farinaceous, much liked by the natives, and sold in the public bazars to the eastward of the mouths of the Ganges, where the plant is indigenous. The method of preparation, to fit them for the table is as follows; a quantity of sand is put into an earthen vessel, placed over a gentle fire, in the sand they put a quantity of the seed, agitate the vessel, or the sand with an iron ladle, the seed swells to more than double its original size, until it becomes light, white and spongy; during the operation the hard husk of the seed breaks in various parts, and then readily separates by rubbing between two boards, or striking it gently with a bye board. The Hindoo physicians consider these seeds to be possessed of powerful medical virtues, such as restraining seminal gleets, invigorating the system, &c. &c.

NYMPHAEA. Schreb. gen. n. 886.

Calyx and *corol* many-petalled. *Germ* inferior, many-celled, *cells* many-seeded; *attachment* septal. *Berry* many-celled. *Seeds* numerous. *Embryo* furnished with a perisperm; direction various.

1. N. *rubra. R.*

Leaves sub-orbicular, margins sharply sinuate-toothed, downy underneath. *Flowers* red. *Stamina* from forty to fifty. *Berries* spherical, from ten to twenty-celled.

Teling. Yerra-kalwa.

Sans. Hulluka, and Rukta Sundhyuka. See *Asiat. Res. vol.* 4. *p.* 285.

Hind. Rukta chunduna, or Sundhuka.

Beng. Rukta kumbula.

A native of India. It flowers during the rainy season. In Bengal there is a small rose-coloured variety with from twenty to twenty-five stamina, and from twelve to fifteen rays in the stigma, consequently the same number of cells

in the capsule. In all other respects they agree. It is by no means so common as *Lotus* but infinitely more gaudy.

2. N. *Lotus. Willd.* 2. 1153.

Leaves orbicularly-peltate, margins sharply sinuate-toothed, downy underneath. *Flowers* white. *Berries* about twenty-celled.

Teling. Tella-kalwa.

Ambel. *Rheed. Mal.* 11. *t.* 26.

Hind. Koee.

Sans. Koomooda.

Beng. Shalook.

It differs from N. *rubra* in the colour of the flowers only. There is a beautiful rare variety with pink-coloured flowers. The white sort is found common in pools, &c. of fresh water in every part of India; it blossoms more or less the whole year, but chiefly during the rains.

3. N. *versicolor. R.*

Leaves oval, peltate, repand-dentate, posterior having the sinus narrow wedge-shaped. *Segments* of the ray of the stigma, fifteen, long, incurred. *Berries* fifteen-celled.

A native of Bengal, where there are two varieties of it; one pure white, the other pink of various shades. Flowering time the rainy season.

4. N. *cyanea. R.*

Leaves roundish, peltate, obtuse, margins waved or even, both sides smooth, posterior lobes overlapping each other. *Flowers* azure; apices of the anthers foliaceous. *Berries* spherical, ten or twelve-seeded.

Sans. Kahlara.

Beng. Soondi; also Neel-pudma.

Teling. Neeti-kalwa.

It is a native of similar places with the last two.

Root the same as in *rubra* and *Lotus.* *Leaves* some-

what peltate, as in *N. rubra*, and *Lotus*, broad-cordate, lobes large and overlapping each other in Bengal; on the coast they are less luxuriant, and often divaricate, with the apex rounded, and the border sometimes waved, of a pale green on the upper side and a deep purple on the under side; both sides smooth. *Flowers* pale blue, considerably smaller than either of the former species. *Petals* from eight to twelve, lanceolate. *Filaments* about twenty-five, in a double series; many of the exterior series having their summits subulate and coloured like the petals. *Rays* of the stigma ten or twelve, very short. *Berry* about half the size of that of the two first species, nearly globular, ten or twelve-celled.

The roots and seeds of this species are also eaten by the natives, but less esteemed than those of the former.

5. N. *esculenta*. *R.*

Leaves sub-peltate, entire, downy underneath; *flowers* white. *Berries* from ten to fifteen-celled.

Koteka is the Telinga name of the plant, and Koteka-dumpa the tuberous root.

Beng. Chota *Soondi.*

Like the other species it grows in sweet, standing waters. It flowers during the wet and cold seasons. This species is considerably smaller than any of the others, even than *cyanea.*

Root perennial, tuberous, &c. like the rest. *Leaves* in shape, colour, substance, and down like those of N. *Lotus*, but the margin is always entire, or most slightly waved, whereas in Lotus it is always scallop-toothed, and as the size according to the rules of Linnæus, cannot be admitted as a specific mark, the difference in the margin is alone to be observed. *Flowers* white, and smaller than those of *cyanea.* *Petals* from ten to fifteen, inserted as in the other species. *Stamens* about thirty, in a double series. *Stigma*, its rays are in number from ten to fifteen, long, and incurv-

ed. *Berry* spherical, of the size of a large nutmeg, from ten to fifteen-celled.

The tuberous roots of this sort, are reckoned by the natives far superior to those of any of the former three.

6. N. *stellata. Willd. Bot. Repos. N.* 330.

Leaves oval, entire, smooth on both sides. *Flowers* blue. *Calyx* four-leaved. *Corol* eight-petalled. *Stigma* eight-rayed. *Stamina* from fifteen to twenty; *apices* of the anthers foliaceous.

Beng. Chhoto Shalk.

Cit-ámbel. *Rheed. Mal.* 11. *t.* 27.

A native of Bengal, and the smallest Indian species of this genus which I have yet met with.

AEGLE. Corr.

Calyx four or five-toothed. *Corol* four or five petalled. *Germ* superior, from eight to twelve-celled; *cells* many seeded; *attachment* interior. *Berry* nearly round, covered with a hard cortex, from ten to fifteen celled. *Seeds* several in each cell. *Embryo* centripetal, no perisperm.

A. *Marmelos. Corom. pl.* 2. *N.* 143. *Corr in act. Soc. Linn.* 5. 222.

Bilva, or Mabua. *Asiat. Res.* 2. *p.* 349.

Beng. Bela.

Covalum. *Rheed. Mal.* 3. *t.* 37.

Bilacus. *Rumph. Amb.* 1. *t.* 81.

Crátaeva *Marmelos. Willd.* 2. 853.

Teling. Maredoo.

Tam. Willa-marvum.

Grows to be a pretty large tree. Is a native of the mountainous parts of the coast of Coromandel; is also found sparingly, in the low lands. It flowers during the hot season, and the fruit ripens after the rains. *Trunk*

pretty erect. *Bark* ash-coloured. *Branches* few and irregular. *Thorns*, axillary, in pairs, single, or none, very sharp, and strong. *Leaves* ternate. *Leaflets* oblong, or broad lanceolate, attenuated to a bent point, crenulate, differing much in size, but the exterior one is always the largest. *Panicles* small, terminal, and axillary, flowers large and white, all hermaphrodite, at least, I have not found any other. *Calyx* four or five-toothed. *Corol* from four to five petalled. *Filaments* about forty, short. *Anthers* linear, erect. *Berry* large, sub-spherical, smooth, with a hard shell, from ten to fifteen-celled; the cells contain, besides the seeds, a large quantity of an exceeding tenacious, transparent gluten, which on drying becomes very hard, but continues transparent; when fresh it may be drawn out into threads of one or two yards in length, and so fine as to be scarcely perceptible to the naked eye, before it breaks. *Seeds* from six to ten in each cell, oblong, a little compressed, woolly, attached to the inner angle of their cell.

This is the *Bilva* or Matura of the *Asiat. Res. vol.* 2. *page* 349, from whence the following is an extract. "Uses. The fruit is nutritious, warm, cathartic; in taste delicious, in fragrance exquisite; its aperient, and detersive quality, and its efficacy in removing habitual costiveness, have been proved by constant experience. The *mucus* of the seed is for some purposes a very good cement." Note "This fruit is called *Shreephula*, because it sprang, say the Indian poets from the milk of Shree, the goddess of abundance, who bestowed it on mankind at the request of Jowarra, whence he alone wears a chaplet of Bilva flowers, to him only the Hindoos offer them; and when they see any of them fallen on the ground, they take them up with reverence, and carry them to his temple."

The root, bark, leaves, and flowers are reckoned refrigerants by the Malabar physicians. The ripe fruit they esteem most wholesome.

In Bengal there is a small variety, which the natives call Shreephu*la* and is I presume that just mentioned by Sir W. Jones.

BIXA. Schreb. gen. n. 887.

Calyx five-toothed. *Corol* ten-petalled. *Capsule* superior, bispid, two-valved.

B. *Orellana. Willd.* 2. 1854.

Can. Kuppa-manhala.

Hind. and *Beng.* Latkan.

Pigmentaria *Rumph. Amb.* 2. *t.* 19.

This small tree appears to be a native of India. The flowers are however white, and the immature *capsule* green. In plants reared from West India seed the flowers are rose-coloured, and the immature seed vessel red, nor do the seeds of our plant furuish so much, nor so good a colour.

CORCHORUS. Schreb. gen. n. 917.

Calyx five-leaved. *Corol* five petalled. *Nectary* cup-shaped, between the corol and stamina. *Capsule* superior, from three to five-celled, three to five-valved.

1. C. *olitorius. Willd.* 2. 1214.

Annual. *Capsules* cylindrical, five-celled, with transverse partitions between the seeds.

Sans. Putta.

Beng. Pat.

A native of various parts of India. It is much cultivated in Bengal during the rains, for the fibres of its bark, which the Bengalees call jute, and employ for a variety of purposes. Of this there is a reddish variety which the natives call *Bun*, or wild *Pat*.

2. C. *capsularis. Willd.* 2. 1216.

Annual. *Capsules* globular, five-celled, without transverse partitions.

Ganja sativa. *Rumph. Amb.* 5. *t.* 78. *f.* 2.

Beng. Ghinalta pat.

Cultivated in Bengal and China during the rains for the fibres of its bark, of which gunny, or rice bags, &c. are made in Bengal.

3. C. *fuscus. R.*

Annual. *Leaves* ovate-oblong. *Stamina* from ten to fifteen. (*Style* single). *Capsules* subcylindrical, six angled, three-pointed, three-celled, with one row of seeds in each.

Beng. Titta-pat.

A native of various parts of India. It flowers during the rainy and cold season. This species is never cultivated. It differs from *tridens*, in having only one style; and from *trilocularis*, in having only one row of seeds in each cell.

4. C. *fascicularis. Willd.* 2. 1216.

Annual, erect, ramous. *Leaves* lanceolate, serrate. *Flowers* in laterifolius, subsessile fascicles, sub-pentandrous. *Capsules* cylindric, three-celled.

A native of Bengal, appearing and flowering during the rains; the seed ripens in the cool season.

5. C. *trilocularis. Willd.* 2. 1215.

Annual, erect. *Leaves* lanceolate, serrate, the lower serratures with or without a bristle. *Stipules* ensiform. *Flowers* paired, peduncled, and pedicelled. *Capsules* filiform, three-celled, hispid; *apex* entire and obtuse.

A native of Bengal. It flowers about the end of the rains; the seed ripens in the cold season.

6. C. *decemangularis. R.*

Annual, erect. *Leaves* elliptically oblong, obtusely serrate, lower serratures with or without a bristle.

Stipules ensiform. *Flowers* paired, subsessile. *Cap-*

sules cylindric, ten-ribbed, five-celled ; *seeds* imperfectly separated.

A native of Bengal. Flowering time the end of the rains ; the seed ripens in the cold season.

GREWIA. Schreb. gen. n. 896.

Calyx five-leaved. *Corol* five-petalled. *Nectary* a scale, or fringed gland on the inside of the base of each petal. *Stamina* and *germ* elevated on a receptacle. *Germ* superior, generally two-celled ; *cells* few-seeded ; *attachment* interior. *Drupe* with from one to four, one or more-seeded nuts. *Embryo* inferior, centripetal, and furnished with a perisperm.

8. G. *oppositifolia. Buch.*

Arboreous. *Leaves* rhomb-ovate-, gland-serrate, scabrous. *Peduncles* leaf opposed, from three to five-flowered. *Petals* lanceolate. *Drupe* from one to four-lobed ; *nuts* one-celled.

A native of Nepal, from thence Dr. Buchanan sent seeds to the Botanic garden at Calcutta in 1802, and in March April, May, and June 1808, the young trees were in flower, and ripened their seed in October and November.

Trunk distinct, erect, stout as a man's arm. *Bark* pretty smooth, light ash colour. *Branches* spreading much, and covered with bark like the trunk. *Branchlets* or *young shoots* bifarious, round, harsh with stellate pubescence, and very short hairs. *Leaves* bifarious, alternate, short-petioled, from ovate, to rhomb-shaped, three-nerved, serrate, with the serratures obtuse and glandular, of an obscure green, and rather harsh on both sides, from two to three inches long, and one and a half broad. *Stipules* ensiform, hairy. *Peduncles* opposite to the leaves, solitary, much longer than the petioles, round, harsh, from

three to five-flowered. *Pedicels* clavate, shorter than the peduncles. *Flowers* pretty large, yellowish. *Bractes*, or involucres several, round the insertion of the pedicels, ensiform, caducous. *Calyx*, the five leaflets linear, three-ribbed on the back. *Petals* lanceolate, with apices acute, but often somewhat serrate-dentate. *Nectarial* glands round, and ciliate. *Germ* ovate, hairy, two-celled, with two ovula in each, attached to the partitions. *Style* the length of the numerous stamina. *Stigma* of two, spreading green lobes with ragged edges. *Drupe* from one to four-lobed, one is most common, and the abortive ones appear attached to its base on one side, smooth, of an olive colour, fleshy; *flesh* a dull purple. *Nuts* one in each lobe of the drupe, obovate, thick, and very hard, one-celled. *Perisperm* conform to the nut. *Embryo* straight, nearly as long as the perisperm, green. *Cotyledons* cordate. *Radicle* ovate, inferior.

It is allied to G. *orientalis*, but the difference is sufficiently marked by the shape of the leaves, and their glandular serratures in this, independent of its being a tree, and the other always a shrub, and scandent when protected and supported; add also the smooth drupe with one-celled nuts.

2. G. *scabrophylla. R.*

Shrubby. *Leaves* round-cordate, serrate, rugose, above scabrous, underneath downy. *Peduncles* axillary, two or three-flowered. *Drupes* round; *nuts* four, one-celled, one-seeded.

A native of the upper parts of India, and reared in the Botanic garden at Calcutta from seed received from Captain Hardwicke, in 1803. Flowering time the hot season in April, the seed ripens in October.

Stem or primary branches several, erect, round. *Bark* of a dark brownish green, and somewhat scabrous. *Branchlets* few, and erect. *Young shoots* hirsute. The

whole plant about three, or four feet high. *Leaves* alternate, short-petioled, of a round, or roundish-ovate form, and somewhat oblique, having the anterior margins often slightly lobed, serrate, from three to five-nerved, rugose, tomentose underneath, scabrous above, and of a very hard texture, about six inches long, and four or five broad. *Stipules* subulate, hairy, caducous. *Peduncles* axillary, generally from one to four together, of various length, two or three-flowered. *Bractes* small, subulate, caducous. *Calyx, leaflets* linear-lanceolate, expanding nearly three times the length of the petals. *Petals* obovate, with the apices a little notched, having the *nectarial scales* small, transversely oval, and ciliate round the anterior margin. *Filaments* numerous, inserted on a slightly elevated receptacle. *Germ* ovate, very hairy, two-celled, with four or six ovula in each, vertically attached to the partitions. *Style* longer than the stamina. *Stigma* of two spreading, laciniate divisions. *Drupe* the size of a large gooseberry, nearly round, being only a little vertically compressed, when ripe of a brownish-grey, and a little hairy. *Pulp* glutinous, and of a very pale yellow colour. *Nuts* four, obovate, rugose, thick and hard, one-celled, one-seeded, attached to the base of a slender fibrous axis. *Seed* conform to the nut, covered with a double integument. *Perisperm* two-lobed, united at the base round the radicle. *Embryo* erect. *Cotyledons* oval, as large as the perisperm, which they divide in two. *Radicle* oval, lodged in the base of the perisperm, close to the umbilicus of the nut.

3. G. *pedicellata. R.*

Leaves oblong, pointed, three-nerved, serrate, smooth. *Stipules* ensiform. *Peduncles* axillary and terminal, many times longer than the petioles, from three to six-flowered. *Germ* and finally the drupe long-pedicelled; *nuts* four, one-seeded.

A native of Amboyna.

4. G. *lanceæfolia. R.*

Shrubby. *Leaves* exactly lanceolate, acuminate, serrate, smooth. *Peduncles* in axillary pairs, three-flowered. *Stipules* subulate.

A native of Chittagong, where it flowers in November.

5. G. *excelsa. Vahl. symp.* 1. *p.* 35. *Willd.* 2. *p.* 1166.

Shrubby, all the tender parts hoary, except the upper surface of the short-petioled, unequally-oblong, three-nerved, serrate leaves. *Stipules* ensiform. *Peduncles* from one to four, axillary, three-flowered.

A native of Chittagong, where it blossoms in April.

6. G. *orientalis. Willd.* 2. 1165.

Shrubby. *Leaves* ovate-cordate, serrate, lucid above. *Peduncles* lateral, or axillary, solitary, three-flowered; *drupes* with four, two or three-celled nuts.

Pai-paroe. *Rheed. Mal.* 5. *t.* 46.

Teling. Peyar.

A large, somewhat scandent, or leaning shrub, common in forests over India. Flowering time the rainy season.

7. G. *asiatica. Willd.* 2. 1166.

Arboreous. *Leaves* round-cordate, serrate, downy. *Peduncles* axillary, collected, longer than the petioles, three-flowered; *drupes* round, with one or two, one-celled nuts.

Beng. Phulsa.

A native of various parts of India, and often cultivated in gardens. It flowers about the end of the cold season, the fruit ripens in April, and May, and is palatable to most people.

8. G. *salvifolia. R.*

Shrubby. *Leaves* lanceolate, serrate, three-nerved, hoary underneath. *Stipules* lanceolate. *Peduncles* axillary, long, and slender, one, two, or three-flowered. *Drupes* round, with two one-celled nuts.

Teling. Pootikee.

A native of Coromandel. It blossoms during the rainy season.

9. G. *hirsuta. Vahl. symb.* 1. 34. *Willd.* 2. 1166.

Shrubby. *Leaves* lanceolate, serrate, very downy. *Stipules* and *bractes* subulate. *Peduncles* one, two, or three, axillary, three or four-flowered; *drupe* four-sided, with four, one-celled nuts.

Teling. Jovellikee.

A large shrub, a native of Coromandel; it blossoms during the hot and rainy season, and the fruit, which is very generally eaten by the natives, ripens in three or four months.

10. G. *tiliæfolia. Vahl. symb.* 1. 35. *Willd.* 2. 1167.

Arboreous. *Leaves* round-cordate, serrate, smooth. *Stipules* transverse, semi-cordtae, falcate. *Peduncles* axillary, numerous, three or four-flowered. *Drupes* two-lobed; *nuts* from three to six-celled.

A native of the Circar mountains. It flowers during the hot season. The fruit of this is also eaten by the natives.

11. G. *carpinifolia. Juss.*

Shrubby. *Leaves* subsessile, cordate-oblong, serrate, scabrous. *Peduncles* one, two, or three, axillary, short, three-flowered. *Petals* linear, with apices bipartite. *Drupes* one, two, three, or four-lobed. *Nuts* from one to four, from one to three-celled.

Teling. Nullee.

A native of the Circars. It flowers during the rainy season.

12. G. *pilosa. R.*

Shrubby. *Leaves* lanceolate, serrate, hairy. *Pedunc-les* axillary, solitary, length of the petioles, three-flowered. *Drupe* twice two-lobed, hairy; *nuts* two-celled, with one seed in each.

A native of the interior parts of Bengal. It flowers during the rains.

Shrubby, erect, soon dividing into many, slender, expanding *branches; young shoots* covered with much hair. *Leaves* alternate, bifarious, short-petioled, lanceolate, with the bases obliquely cordate, three-nerved, serrate, hairy on both sides, from three to six inches long, and about one broad. *Stipules* subulate, hairy. *Peduncles* axillary, solitary, rarely two in the same axill, about the length of the petioles, three-flowered. *Flowers* small, white when they first expand, afterwards becoming yellow. *Pedicels* shorter than the peduncles. *Bractes* linear-lanceolate, hairy. *Calyx; leaflets* lanceolate, expanding, hairy. *Petals* scarce half the length of the calyx, lower half enlarged and fringed with a gland on the centre. *Filaments* many, shorter than the style. *Germ* elevated on a fleshy receptacle, very hairy. *Style* cylindric. *Stigma* two or three-cleft; *segments* pencil-formed. *Drupe* twice two-lobed, hairy, of the size of a marrowfat pea. *Nuts* four, each two-celled, with a single seed in each cell.

It differs specifically from my *hirsuta*, the only species known to me for which it can be mistaken, in having solitary peduncles, two or three-cleft stigma, and nuts with two cells. The leaves are also much longer and more hairy, so is the whole plant.

13. G. *polygama. R.*

Polygamous. Shrubby. *Leaves* lanceolate, serrate,

hairy. *Peduncles* axillary, longer than the petioles, from two to six-flowered. *Drupe* twin; each two-lobed, with a solitary one-celled, one-seeded nut in each.

A native of the interior parts of Bengal. Flowering time the rainy season; the seed ripens during the cool months of November and December.

Trunk trifling. *Branches* bifarious, spreading; *young shoots* downy and scabrous. *Leaves* alternate, bifarious, short-petioled, lanceolate, serrate, three nerved, both sides downy, particularly the under one, and hairy; about four inches long and about one broad. *Stipules* subulate. *Peduncles* axillary. In the male two, three, or four together, two or three times longer than the petioles, round, hairy, each supporting from two to six pedicelled, small white flowers. *Bractes* or *involucres* subulate, villous, generally one to each pedicel. *Calyx; leaflets* linear, expanding, villous, twice the length of the petals. *Petals* oblong, with apices entire, and the usual hairy nectarial mark on the inside of the lower half. *Filaments* numerous. In the male flowers inserted on an elevated receptacle; in the hermaphrodite ones round the base of the germ, and mixed with much white hair. *Pistil;* in the flowers of the male plant there is nothing like one. In the female it is roundish, and very hairy. *Style* longer than the stamens. *Stigma* very large, stellate. *Drupe* four-lobed, hairy. *Lobes* about the size of a small pea, each containing a single, one-seeded nut.

It differs from G. *pilosa*, in being polygamous, and the nuts being one-celled. It is also nearly allied to my G. *tomentosa*, the best distinguishing mark is the male flowers in this species.

14. G. *sepiaria. R.*

Shrubby. *Leaves* obovate, serrate. *Peduncles* axillary, solitary, three-flowered. *Berries* twin, singly two-lobed, with one seed in each.

Hind. and *Beng.* Pan-saur*a.*

It is found all over Bengal, where it is often employed with *Trophis aspera* (*Soura*) to make hedges, and a remarkably close, evergreen one they make. Flowering time the rainy season.

Stems scarcely to be distinguished from the numerous, bifarious, spreading branches, and branchlets, with which it is enveloped; *young shoots* scabrous. *Leaves* bifarious, alternate, short-petioled, obovate, serrate, three-nerved, of a deep, lively green colour, at the same time scabrous to the feel; size exceedingly various, but in general small. *Stipules* setaceous. *Peduncles* axillary, solitary, scabrous, about half the length of the leaves, three-flowered; *pedicel* thickening, shorter than the peduncles. *Bractes* a few, small, round the apex the peduncles like an involucre. *Calyx*, &c. as in the genus. *Berries* twin, each two-lobed with one seed in each lobe.

15. G. *sapida. R.*

Suffruticose. *Leaves* oblong, sublobate, small, five-nerved, scabrous. *Peduncles* axillary, four times longer than the petioles, several together, three-flowered. *Petals* two-toothed. *Drupes* round, with from one to three one-seeded nuts.

A native of Bengal. It flowers during the hot season; the fruit is small, but palatable.

16. G. *obliqua. R.*

Arboreous. *Leaves* short-petioled, obliquely-cordate, repand, minutely dentate, scabrous above, downy underneath. *Peduncles* axillary, three-flowered. *Drupe* with four, two-celled nuts.

A native of Hindoostan. This has by far the largest fruit of any *Grewia* I have yet met with.

17. G. *heteroclita. R.*

Leaves alternate, short-petioled, linear-oblong, cuspi-

date, entire. *Stamina* in five pairs, each united at the base with a sterile filament. *Stigma* simple.

A native of the Molucca Islands.

18. G. *didyma. R.*

Sub-arboreous. *Leaves* lanceolar, serrate, smooth, fine-pointed. *Peduncles* axillary, much longer than the petioles. *Drupes* twin, with two one or two-celled nuts in each.

Teling. All-peyar.

A native of the Circar mountains; it flowers during the rainy season.

19. G. *aspera. R.*

Arboreous. *Leaves* round-cordate, serrate, sometimes lobed, scabrous. *Peduncles* short, axillary, several together, three or four-flowered. *Drupes* four-sided, with four one or two-celled nuts.

A native of the Circar mountains.

20. G. *umbellata. R.*

Shrubby, scandent. *Leaves* cuneate-oblong, serrate. *Umbellets* terminal. *Petals* linear, entire. *Receptacle* cylindric, with pentagonal base.

A native of Sumatra. It flowers in the Botanic garden at Calcutta in April and May.

21. G. *paniculata. R.*

Leaves short-petioled, cuneate-oblong, towards the apex serrate, downy, with soft, stellate pubescence, underneath, three-nerved. *Stipules* two-cleft. *Panicles* terminal, mealy. *Petals* entire.

A native of Pulo Pinang, where it was found by Dr. Hunter.

22. G. *ulmifolia. R.*

Shrubby, erect. *Leaves* bifarious, broad-lanceolate,

having the whole margins serrate, acuminate. *Stipules* simple. *Panicles* terminal. *Petals* retuse. *Drupe* with a single bearded, three-celled nut.

A native of China and of the country about Silhet. It flowers in the rains; the seed ripens during the cool season. In Silhet it grows to be a tree, the fruit is the size of a gooseberry, and very generally eaten.

23. G. *begonifolia. R.*

Leaves oblong, with the base obliquely-cordate, entire, three-nerved, harsh, with stellate hairs underneath. *Stipules* and primary bractes ear-shaped. *Panicles* terminal, downy.

Found by Mr. Smith at Amboyna in flower in August. From the appearance of his specimens, I imagine it is a tree.

ELAEOCARPUS. Schreb. gen. n. 898.

Calyx five-parted, or five-leaved. *Petals* five, laciniate. *Anthers* with the top two-valved, and bearded, crowned. *Germ* from two to five-celled; *cells* two, or many-seeded. *Drupe* superior, with a tubercled, from two to five-celled nut; *cells* one-seeded. *Embryo* inverse, and furnished with a perisperm.

1. E. *ganitrus. R.*

Leaves alternate, lanceolar, serrulate. *Flowers* racemed. *Stamina* forty, bearded. *Drupes* spherical; *nuts* spherical, five-celled.

Ganitrus *sphærica. Gært. sem.* 2. *p.* 271. *t.* 139.
Ganitrus. *Rumph. Amb.* 3. *p.* 162. *t.* 101.
Sans. Roodraksha.
Hind. Roodrakh.
Beng. Roodrakhya.
A tree, a native of various parts of India, as well as

of the Malay Archipelago. The following description of the tree was made from one growing in the vicinity of Dacca, which was brought to that place by a fak*i*r some years ago, and there planted in his garden, and is now according to the information of the Honourable Charles Andrew Bruce, about the size of a large apple tree. It blossoms in February and March, and the fruit ripens in November.

Leaves alternate, approximate, short-petioled, lanceolar, serrulate, smooth on both sides, but while very young slightly sericeous, about six inches long, and about one and a half broad. *Stipules* minute, conical, caducous. *Racemes* from the former years branchlets below the leaves, and rather shorter than them, simple, drooping, one-flowered. *Flowers* of a middle size, drooping, white. *Bractes* of the pedicel solitary, one-flowered ; of the calyx two, opposite, oblong, villous, having the anterior margins dentate and all dropping off at an early period. *Calyx* five-leaved, *leaflets* lanceolate, acute, the length of the petals, slightly villous on both sides ; on the inner a small longitudinal rib runs down the middle. *Petals* five, sessile, oblong, the length of the stamina ; the exterior half divided into numerous, subulate segments, somewhat villous. *Nectary* none, unless the receptacle of the germ and stamina can be so called, it projects into five obscure lobes, between the insertions of the petals. *Filaments* about forty, short, inserted on a large, convex receptacle on which the germ sits. *Anthers* linear, two-celled, gaping at the apex, where there are sometimes a few distinct hairs. *Germ* superior, ovate, villous, five-lobed, five-celled, with about four seeds in each, attached to the upper end of the axis. *Style* longer than the stamina, five-groved. *Stigma* simple, small, acute. *Drupe* perfectly round, smooth, of the size of a large cherry, and of a deep purple colour ; *pulp* firm, rather dry and of a dull brownish yellow colour. *Nut* spherical, thick, very hard, having

the surface elegantly tubercled, and marked with five-equidistant, deep grooves running from the apex to the base, five-celled. *Seeds* generally solitary, though sometimes two, when single, oblong, tapering most at the apex. *Integuments* two; the *exterior* one brown, hard, smooth, and brittle; the *inner* one grey, and membranaceous. *Perisperm* conform to the seed, oily. *Embryo* inverse nearly as long and broad as the perisperm. *Cotyledons* oblong, thin, three-nerved. *Plumula* two-lobed. *Radicle* oblong, superior. Gærtner has no doubt mistaken the apex of the drupe of this plant, for the base; and if more proof is required, let me add of *Elaeocarpus serratus* also, where the *embryo* is also inverted, though the nut is never more than three-celled, that being the number of cells in the germ, and also my E. *bilocularis*, where the *perisperm* and *embryo* are the same, and the nut bilocular. I am a very inferior judge of natural orders, but certainly think this cannot belong to the same order with *Garcinia*, in which I include *Gambogia*, and two species of *Xanthochymus*. If it does, I must despair of ever making any progress in this branch of the science.

2. E. *tuberculatus. R.*

Leaves petioled, obovate-cuneate, remotely-serrulate. *Flowers* racemed: *stamina* seventy-five, terminal by a thread. *Drupe* oval, *nuts* ovate, much tubercled, thick-margined, two-celled.

Tam. Roodrach, or *Oo*derach.

A tree, a native of the forests of Travancore, where it blossoms about the beginning of the hot season. Dr. Berry of Madras, who has procured from Mr. George Young specimens and seeds of this sacred tree, says the nuts are sold by the *Su*nyasees, or holy men, to the Hindoos, set in gold, and by them wore as a religious ornament.

Leaves crowded about the ends of the branchlets, al-

ternate, petioled, long, ovate-cuneate, remotely serrulate, obtuse, smooth on the upper side, somewhat hairy, particularly the rib and veins underneath, from six to twelve inches long, by three or four broad. *Petioles* one-sixth of the length of the leaves, round, a little hairy. *Stipules* conical, hairy. *Racemes* from the axills of the former year's fallen leaves, single; twice the length of the petioles. *Pedicels* alternate, drooping, one-flowered. *Bractes* lanceolate, villous, caducous, one under the insertion of each pedicel. *Flowers* larger than in any of the other species I have yet met with. *Calyx* five-leaved. *Leaflets* lanceolate, downy on both sides, more than half of the length of the petals. *Petals* five, unciform, very hairy on both sides; exterior margins deeply divided into numerous capillary segments. *Filaments* numerous, viz. from seventy to eighty, short, inserted into the receptacle, round the base of the germ, very hairy. *Anthers* linear, much longer than the filaments, and terminated by a single, long, capillary point. *Germ* superior, ovate, a little compressed, very hairy, two-celled, with about eight seeds in each, disposed in two vertical rows, and attached to the partitions. *Style* rather longer than the stamina. *Stigma* acute, simple. *Drupe* oval, smooth, of the size of a small apple; in the dry state, in which only I have seen it, covered with a considerable portion of a friable substance under the thin, tender, smooth cortex. *Nut* ovate, or oval, compressed, much tubercled on each of the flat sides, having an elevated sulcate ridge from the apex to the base, which marks where the two valves separate, of a tough, hard, ligneous texture, two-celled, though one is very often abortive, two-valved; *partitions* contrary. *Seed* generally solitary, rather thin, long-ovate. *Integuments* uncertain. *Perisperm* conform to the seed, horny. *Embryo* very nearly as long and broad as the perisperm, inverse. *Cotyledons* thin, three-nerved. *Radicle* sub-cylindric, superior.

3. E. *serratus. Willd.* 2. 1169.

Leaves alternate, broad-lanceolar, serrate. *Stamina* thirty, bearded. *Drupes* oblong. *Nut* porous, with three-cells.

Perin Kara. *Rheed. Mal.* 4. *t.* 24.

Beng. Julpai, the name it is known by in the gardens at Calcutta.

This small tree is now common in the Company's Botanic garden. It is a native of the interior provinces, towards the mountains. It flowers during the hot season.

Leaves spreading about the extremities of the branchlets, alternate, petioled, oblong, serrate, smooth, of a shining green on both sides, from four to five inches long. *Petioles* nearly round, smooth, an inch and a half long. *Stipules* minute. *Racemes* solitary, simple, just below the leaves of the present year's shoots, or from the axills of the fallen leaves. *Flowers* very numerous, small, white, surrounding every part of the raceme, all pointing to the earth. *Bractes* most minute. *Calyx* five-leaved. *Petals* five, wedge-formed, beautifully fringed. *Nectary*, five large fleshy glands surrounding the base of the germ. *Filaments* thirty, inserted into the upper and inner sides of the nectarial glands. *Anthers* linear, with the apex bearded. *Germ* superior, round. *Style* single, pointed, as long as the corol and stamens. *Drupe* size of a large olive, and very much like one, even in colour when ripe. *Nut* very hard, pointed, oblong, smooth, with three equi-distant spurious sutures, that do not open, smooth, except for small pits like those of the almond, but smaller, three-celled. *Seeds* oblong, smooth.

Without success I have tried to extract oil from the fruit. They are dried and used in curries by the natives, and also pickled.

4. E. *rugosus. R.*

Leaves subsessile, obovate-oblong, serrate, smooth.

Racemes below the leaves, single. *Stamina* thirty, terminated by a single thread. *Drupe* oval; *nut* rugose, thin-edged, from one to two-celled.

Bun Julpai, the vernacular name in Chittagong, where it is indigenous, and grows to a great size, with a scanty crown. Flowering time March; the seed ripens in June and July.

Leaves about the ends of the branches, alternate, subsessile, obovate-oblong, serrate, of a firm texture, smooth on both sides, except when very young, thin, and clothed with a little ferruginous down; from six to twelve inches long, and from four to six broad. *Racemes* numerous, under the leaves, and shorter than them, spreading nearly horizontally. *Flowers* large, long-pedicelled, drooping. *Peduncles* and *pedicels* clothed with dark ferruginous down. *Bractes* small, caducous. *Calyx* five-leaved; *leaflets* lanceolate, on the outside downy. *Petals* five, subcuneiform, villous, with the apex irregular, and deeply cut into numerous filiform segments. *Filaments* thirty, short, inserted round the base of the germ, into a villous receptacle. *Anthers* linear, crowned with a single thread. *Germ* superior, villous, grooved, two-celled, with about eight ovula in each, attached in an imbricated order, in two vertical rows from their apices to the middle of the partitions. *Style* longer than the stamina. *Stigma* simple. *Drupe* obovate, of the size of a small pullet's egg, smooth, of an olive yellow. *Nut* oblong, a little pointed, rugose, having the edges sharp, thick, hard, and tough, one, rarely two-celled. *Seed* solitary, oblong. *Integument* single, thick and brown. *Perisperm* conform to the seed, horny. *Embryo* inverse. *Cotyledons* very thin, oblong, three-nerved, nearly as broad and long as the perisperm. *Plumula* two-lobed. *Radicle* ovate, superior.

5. E. *rubustus*. *R.*

Leaves ovate-oblong, serrate, acuminate, smooth. *Sta-*

mina fifty, bearded. **Dulpai**, probably ***Julpai,*** is the vernacular name in Silhet, where it is indigenous, and grows to be a very large tree. ***Flowering*** time the beginning of the rains in June.

Young shoots slightly villous. ***Leaves*** alternate, petioled, ovate-oblong, serrate, acuminate, smooth, thick, and of a hard texture, about six inches long, and three broad. ***Petioles*** about an inch long. ***Racemes*** axillary, and from those of the last year, solitary, simple, diverging with a curve, villous, scarcely so long as the leaves. ***Flowers*** numerous, large, white, fragrant, pedicelled, drooping. ***Calyx*** of five lanceolate, hoary leaflets. ***Petals*** five, broad-cuneiform, with the exterior margin multifid. ***Nectarial*** glands five, large, villous. ***Filaments*** fifty, nine between each pair of glands, and one from the inside of the apex of each short. ***Anthers*** linear, gaping at the top, and somewhat bearded. ***Germ*** oval, three-celled, with two ***ovula*** in each attached to the axis. ***Style*** shorter than the petals. ***Stigma*** small, tri-dentate. ***Drupe*** oval, of the size of a pigeon's egg, smooth, of a yellow olive colour, and pulpy; when ripe one-celled. ***Nut*** oblong, rugose, very hard, three-celled, and in time having three valves. ***Seed*** solitary, linear, oblong. ***Perisperm*** conform to the seed, soft and oily. ***Embryo*** inverse, &c. as in the other species.

6. E. ***lanceæfolius. R.***

Leaves alternate, lanceolar, serrate, smooth. ***Stamina*** fifteen, bearded. ***Drupe*** long, turbinate, with a one-celled nut of nearly the same shape.

Sufed-pai, is the vernacular name in Silhet, where it grows to be a middling sized tree. Flowering time the beginning of the rains; the fruit ripens in September and October.

Young shoots round and perfectly smooth. ***Leaves*** about the ends of the twigs, alternate, short-petioled,

broad-lanceolar, serrate, rather obtuse, pointed, smooth on both sides, from four to six inches long, and scarcely two broad. *Stipules* none. *Racemes* axillary, and from those of the last year, solitary, diverging with a curve, rather shorter than the leaves. *Flowers* alternate, pretty long-pedicelled, recurvate, small, white. *Calyx* five-leaved; *leaflets* lanceolate. *Petals* five, cuneiform; exterior margin deeply laciniate. *Nectarial* glands five, large, embracing the lower part of the germ. *Filaments* fifteen, short, two between the nectarial glands and one from the inside of the apex of each of them. *Anthers* linear, gaping at top, and there somewhat bearded. *Germ* ovate, three-celled, with two *ovula* in each, attached to the axis. *Style* the length of the corol. *Stigma* small, three-toothed. *Drupe* long, turbinate, of the size and appearance of a large olive, smooth, when ripe of a greenish yellow, one-celled. *Nut* sub-clavate, turbinate, tapering most towards the base, and having there a superficial perforation, one-celled, three-valved. *Perisperm* conform to the seed. *Embryo* inverse. *Cotyledons* cordate-lanceolate. *Radicle* superior.

7. E. *aristatus. R.*

Leaves petioled, obovate-cuneate, obtuse, and obtusely serrulate. *Racemes* axillary. *Stamina* from forty-five to fifty, awned. *Drupe* oval; *nut* generally one-celled.

Ran *dulia* is the vernacular name in Silhet, where it is indigenous, and grows to be a tree of very considerable magnitude. Flowering time in April, and the fruit ripens in August.

Young shoots thick, and rather rough, with a few hairs, which soon disappear by the wind, friction, &c. *Leaves* alternately crowded about the ends of the branchlets, petioled, cuneate-obovate, obtuse, and obtusely serrulate, smooth on both sides, and firm in texture; from four to six inches long and from two to three broad. *Petioles*

about an inch long, with a very few short hairs scattered over them. *Stipules* subulate, hairy, caducous. *Racemes* axillary, drooping and spreading, of the length of the leaves, a little hairy. *Flowers* few, long-pedicelled, generally drooping, large, yellow, and fragrant. *Calyx* of five, lanceolate, hairy, villous leaflets. *Petals* five, cuneiform, having the exterior margin deeply laciniate, very hairy, particularly on the outside; the hairs white, depressed, and pointing forward. *Filaments* regularly from forty-five to fifty, short, smooth, and slender, inserted in five, scarcely distinct bundles, on the top of the hairy receptacle. *Anthers* linear, opening at the top, the exterior lip of this mouth is continued into a pretty long, simple, straight arista. *Germ* ovate, very hairy, and elevated on the usual receptacle, which is here very hairy, two-celled, with from ten to twelve *ovula* in each, attached in two vertical rows, to the middle of the partition. *Style* subulate. *Stigma* acute. *Drupe* the size, shape, and colour of a large olive. *Nut* oblong, both ends pointed, having a pretty large rib on each of the flattened sides running from the base of the apex, one, rarely two-celled, surface a little rugose, texture both hard and tough. *Seed* solitary, oblong, flat. *Integument* single, thick, hard, and of a dark brown. *Perisperm* conform to the seed, cartilaginous. *Embyo* inverse. *Cotyledons* as much extended as the perisperm, oblong, very thin, three-nerved. *Radicle* oval, superior.

8. E. *lucidus. R.*

Leaves long-petioled, broad-lanceolar, remotely serrate, lucid, two minute glands at the base.

A tree, a native of Chittagong.

9. E. *fruticosus. R.*

Shrubby. *Leaves* opposite, broad-lanceolate, serrulate. *Corymbs* axillary. *Petals* much lacerated, united by

woolly margins. *Stamens* and *pistil* inserted on a large receptacle. *Anther*s bearded.

A native of the Moluccas, dried specimens have only been seen, the genus is therefore doubtful, and the more so as the leaves are opposite.

VATERIA. Schreb. gen. n. 906.

GEN. CHAR. *Calyx* five-cleft, permanent. *Corol* five-petalled. *Germ* superior, three-celled; *cells* two-seeded; *attachment* superior. *Capsule* one-celled, three-valved. *Seed* solitary. *Embryo* inverse, no perisperm.

1. V. *lanceæfolia. R.*

Leaves alternate, lanceolate, entire. *Panicles* axillary. *Stamina* fifteen.

Moal, the vernacular name in Silhet.

A middling sized, spreading tree, a native of the hills in the vicinity of Silhet, and Chittagong, where it flowers in May, and the seed ripens in July and August.

From wounds, &c. in the bark, a clear liquid exudes, which soon hardens into a very pure pale amber coloured resin, from which the natives obtain by distillation, a dark coloured, thick, strong smelling balsam, called chooa, or chova, by the people who prepare and sell it; and *Goond* by the brahmins, who use it in their religious ceremonies and temples.

Branches numerous, and generally reclinate. *Bark* of the old ligneous parts pretty smooth and ash-coloured; of the *young shoots* quite smooth. Wood white, and very close in the grain. *Leaves* alternate, short-petioled, lanceolate, some of the largest may be called oblong; all are entire, some obtuse, some acuminate; all are smooth-pale; coloured underneath, from four to eight inches long and from one to three broad, with simple veins extending to the margin. *Panicles* axillary, shorter

than the leaves, composed of several, alternate, compound, smooth branches. *Flowers* numerous, pretty large, white, and fragrant; in the bud imbricated. *Calyx* five-parted, outside hoary, permanent, and much increased in size by the time the seeds are ripe; *segments* ovate, and acute. *Petals* five, linear-falcate, obtuse, spreading, with a concave base, forming a gibbous tube round the stamina and pistillum, and hiding all except the stigma; in the bud imbricated. *Filaments* fifteen, very short and thick, inserted into the receptacle, round the base of the germ, one opposite to each petal, and two between. *Anthers* short, ovate, two-lobed; crowned with a single subovate gland. *Germ* superior, ovate, ribbed, villous, three-celled, with two *ovula* in each, attached to the top of the axis in a way perfectly distinct from Jussieu's *Guttiferæ*. *Style* short. *Stigma* clavate, three-toothed. *Capsule* ovate, of the size of a pigeon's egg, rather thick, and of a pretty firm texture, when dry one-celled, three-valved, opening from the apex. *Seeds* generally one, sometimes two, scarcely ever more, when single, conformed in shape to the capsule. *Integuments* single, smooth, dark brown and thin. *Perisperm* none. *Embryo* inverse. *Cotyledons* two, conform to the seed, nearly equal, thick, and of a firm fleshy texture; one or both bifid from the apex to the attachment of the circle, which is a little below the middle, two-toothed. *Radicle* lanceolate, superior. The whole being very exactly the perfect *embryo* of the other *Shoraceæ*, only the cotyledons are here more equal than in the genus. *Shorea* itself.

2. V. *indica. sp. pl.* 734. *Gært. sem.* 3. 52. *t.* 189.

Leaves alternate, oblong. *Panicles* terminal. *Stamina* from forty to fifty.

Eleocarpus *copaliferus. Retz. Obs.* 4. *n.* 85. *Willd.* 2. 1170. *Vahl. symb.* 3. 6. 7.

Paenoe. *Rheed. Mal.* 4. *t.* 15.

Peini marum. *Buch. Journey in Mysore, Canara, &c.* 2. 476.

A very large and handsome tree, a native of Malabar. In the Bednore country, it is called the Dammar tree by the English, and blossoms during the hot season; the seed ripens in August.

Note. In all the flowers examined by me the stamina had uniformly short broad filaments, and linear anthers, terminating in a single, tapering, acute thread, or soft bristle. Can König's Ceylon tree with two bristles be the same? The superior calyx of Retz, I must consider a mistake. However the genus is perfectly distinct from *Eleocarpus*, and every other known to me.

Young shoots and all tender parts, except the leaves, covered with fine stellate pubescence. *Leaves* alternate, petioled, oblong, entire, from emarginate to obtuse, pointed, smooth, coriaceous, from four to eight inches long, and from two to four broad. *Petioles* round, about an inch long. *Stipules* oblong. *Panicles* terminal, ramifications rather remote. *Flowers* rather remote, pedicelled, pretty large. *Bractes* oblong, one-flowered. *Calyx* five-cleft to the base; *divisions* oblong, obtuse, villous on the outside. *Corol* five-petalled. *Petals* oval, emarginate, broader but very little longer than the divisions of the calyx. *Filaments* from forty to fifty, short, broad, inserted between the petals and the base of the germ. *Anthers* linear, with a single filiform beak. *Germ* superior, conic, downy, three-celled; *cells* containing three *ovula*, each attached to the top of the axis. *Style* longer than the stamens. *Stigma* acute. *Pericarpium* a coriaceous, fleshy, oblong, obtuse, one-celled, three-valved *capsule*; general size about two and a half inches long, and one and a half in diameter. *Seed* solitary, shape of the capsule.

Abundance of the resin called *copal* exudes from this tree, in its native soil. When recent it is found from pale

green, to a deep amber colour, with all the intermediate shades. In some parts of India beads are made of such pieces as most resemble amber beads, so much like that substance is it, even to being electrical when excited by rubbing.

The resin or substance as it flows from the tree, applied while in its fluid state, makes a good varnish, called Piny Varnish on the Malabar Coast, and there the tree is commonly called the Piny Varnish tree, or Piny Marum. It is mentioned by Dr. Buchanan in his *Journey through Mysore, Canara, and Malabar, vol. 2. p.* 476; but as that book may not be in the hands of every one, I will transcribe what he says, viz. "Some men of the Panchala tribe, which here is called Peningelan, paint and varnish by the following process. They take butter-milk and boil it with a small quantity of quick lime, until strings form in the decoction, and separate from the watery parts, which they decant. The stringy matter is then mixed with the paint, which has been well-powdered; with these the wooden work is first painted, it is then allowed to dry for one day, and afterwards receives a coat of Pundum, which is the fresh juice of a tree called Peini Marum. The Pundum must be used while it is fresh, and will not keep for more than two or three days. After the first coat of Pundum has dried, another coat of paint is given, and that is followed by another of varnish. In the same manner leather may be painted and varnished. The varnish effectually resists the action of water. All my attempts however to find out the varnish tree were vain."

MESUA. Schreb. gen. n. 1146.

GEN. CHAR. *Calyx* four-leaved. *Corol* five-petalled. *Germ* superior, two-celled; *cells* two-seeded; *attachment*

sub-inferior. *Capsule* one-celled, two-valved. *Seeds* from one to four. *Embryo* erect, without perisperm.

M. *ferrea. Willd.* 3. 843.

Leaves lanceolate.

Nagacesara, Nagkesura, Sunscrit names. See *Asiat. Res.* 4. 295.

Beng. Nagsara or Nagkesur.

This most elegant tree is only, so far as I can learn, found in gardens in Bengal. I never saw it on the Coromandel coast. Flowering time the beginning of the warm season.

Trunk straight, and beautifully slender in proportion to its height; *bark* smooth, dark ash-coloured. *Leaves* opposite, short-petioled, lanceolate, entire, veinless, above smooth, and shining; underneath whitish, with a subtile dust, which may be rubbed off, from three to six inches long, and one or a little more broad. *Flowers* terminal, rarely axillary, solitary, or in pairs, short-peduncled, large, delightfully fragrant, petals pure white, with a large globe of bright gold-coloured anthers in the centre. *Bractes* none. *Calyx* four-leaved; *leaflets* orbicular, concave, the inner pair somewhat large, and with membranaceous margins. *Petals* four, expanding, nearly obcordate, curled; *margins* often torn, and forcibly bent inward from their situation in the strong calyx before expansion. *Filaments* numerous, several hundreds, about one-fourth part of the length of the petals, filiform, slightly united at the base, unto a fleshy ring. *Anthers* linear.* *Germ* superior, ovate, conic, two-celled, with two ovula in each attached to the

* The stamens are generally permanent and as the capsule enlarges, the ring which they formed round the base of the germ, bursts into several portions, which gives them the appearance of being polyadelphous.

I am informed that the Grandees of Ava, stuff their pillows with the dried anthers of this plant, on account of their fragrance.

lower and inner angle of the cell, where the thickened base of the partition forms the receptacle. *Stigma* peltate. *Capsule* size of a crab-apple, nearly round, with an acute point, one-celled, the partition being nearly obliterated, two-valved. Valves thick, firm, somewhat fibrous, scabrous on the outside, glossy, light brown within. *Seeds* from one to four, shape conform to the number in the capsule, attached as in the germ. *Integument* single, and much like that of the common chesnut. *Perisperm* none. *Embryo* erect. *Cotyledons* two, conform to the seed, fleshy, pale-yellow. *Radicle* minute, patelliform, inferior.

CALOPHYLLUM. Schreb. gen. n. 1587.

GEN. CHAR. *Calyx* none. *Corol* eight-petalled, unequal. *Stamina* fascicled *(polyadelphous.)* *Germ* superior, one-celled, one-seeded; *attachment* inferior. *Drupe* superior, dry, globular, one-seeded. *Embryo* erect, without perisperm.

1. C. *Inophyllum. Willd.* 2. 1157.

Leaves oval, with the base round, polished. *Flowers*-polyadelphous.

Ponna marum. *Rheed. Mal.* 4. *t.* 38.

Teling. Poona.

Hind. Sultana-champa.

This most elegant tree is to be found in a cultivated state over most parts of India, and is indigenous near the shores of the southern parts. It is in flower and fruit most part of the year, and is particularly beautiful.

Trunk seldom straight, often as thick as a man's body. *Branches* numerous. *Bark* tolerably smooth, greenish-grey. *Leaves* opposite, short-petioled, oval, emarginate, remarkably smooth, and opening on both sides, with numerous parallel veins; four inches long and from

two to three broad. *Stipules* none. *Racemes* axillary, drooping, few-flowered. *Flowers* pretty large, pure white, fragrant. *Bractes* minute, falling early. *Calyx* and *corol* so much alike in colour, as not to be distinguished. *Filaments* about two hundred, generally conjoined into four bodies at the base. *Germ* round, one-celled, with one ovulum attached to the bottom of the cell. *Style* much longer than the *stamina*. *Stigma* large, irregularly lobate, peltate. *Drupe* spherical, above an inch in diameter, smooth, when ripe somewhat yellow, and covered with a small quantity of yellowish pulp, which bats are fond of, one-celled. *Nut* conform to the drupe, &c. as figured and described by Gærtner. *vol.* 1. *p.* 20. *t.* 43. *Perisperm* none. *Embryo* erect. *Cotyledons* seem to be spherical, and remain in the nut during vegetation. *Plumula* two-lobed. *Radicle* inferior, when vegetation begins it pushes through the bottom of the nut where it was attached to the envelope, leaving the cotyledons in the nut under the ground.

2. C. *Bintagor. R.*

Twigs cylindric. *Leaves* oblong, emarginate; *base* tapering, lucid, finely veined.

From the Mauritius plants have been received into the Botanic garden at Calcutta, where they grow freely, and though they have not yet blossomed, the leaves evidently point out a specific difference between this and the first species.

Bintagor maritima, Rumph. Amb. 2. *t.* 71, is but a bad figure of this beautiful tree, the fruit is double the size of those produced by the only species I have yet found on the coast of Coromandel, which I consider to be *Inophyllum*. Louriero's *Balsamaria* may be either, for what I can say.

Seeds received from Otaheite were about the size of Rumph's; they have produced plants with leaves, only

a little more lengthened in proportion to their breadth than those of the Mauritius trees. In other respects they are alike.

3. C. *angustifolium. R.*

Twigs cylindric. *Leaves* short-petioled, lanceolate, with lengthened, somewhat obtuse points, lucid, finely veined. *Flowers* in axillary fascicles; *pedicels* with a cyathiform apex.

A native of Prince of Wales's Island, &c. to the eastward of the Bay of Bengal, where it grows to be a tree of great size, and I am told yields the straight spurs, commonly called *Peon*, in these countries are used for the masts of ships.

4. C. *tetrapetalum. R.*

Leaves short-petioled, ovate, lanceolate, very finely serrulate. *Umbels* axillary. *Corol* four-petalled.

A native of the Moluccas.

5. C. *Suriga. Buch.*

Leaves linear-oblong, polished. *Flowers* verticelled below the leaves. Calophyllum Soulattri, *Burm. Fil. end.* 121. The tree is a native of the mountains of that Coast. The flowers are large, beautiful and fragrant.

6. C. *lanceolarium. R.*

Twigs square. *Leaves* lanceolar, obtuse, lucid, finely veined.

From the Mauritius this very beautiful species has been introduced into the Botanic garden at Calcutta, but as it has not yet blossomed, the genus is not certain, though the habit and foliage are pretty strong proofs of its belonging to this genus.

HOPEA. R.

GEN. CHAR. *Calyx* five-leaved, two of them increasing with the capsule into wings. *Corol* one-petalled, contorted. *Filaments* ten, inserted on the tube of the corol, alternately two-cleft. *Anthers* fifteen. *Germ* superior, three-celled; *cells* two-seeded; *attachment* superior. *Capsule* one-celled, one-valved. *Seed* solitary. *Embryo* inverse, without perisperm.

The great affinity of this genus to *Shorea* and *Dipterocarpus* induced me to place it here, rather than in *Dodecandria*, where it formerly stood. It is so named in memory of the late Dr. John Hope, professor of Botany in Edinburgh. The genus formerly so called is now referred to *Symplocos*, and *Vahl's Hopea*, *En. pl.* 1. 3. is my *Pladera pusilla*. *Exam. sessile Willd.* 1. 636.

1. H. *odorata. R.*

Leaves ovate-oblong, a hollow gland in the axills of the large veins.

A single tree, and the only I have seen, grows in the garden of Mr. Dowdeswell near Calcutta. Its native place, the mountains to the eastward of Bengal. Flowering time the month of March. The seed ripens in May and June.

Trunk of the above-mentioned single tree straight, four feet in circumference, and high in proportion. *Branches* numerous, spreading in every direction, and adorned with many long, slender, drooping, expanding, bifarious branchlets, covered with dark brown, smooth bark. *Leaves* alternate, short-petioled, bifarious, drooping, ovate-oblong, entire, waved, smooth, shining, of a deep green on both sides, having often on the under side a pretty large single gland in the axills of the large veins. *Stipules* subulate, falling off at a very early period.

Panicles terminal, and from the exterior axills, drooping, composed of alternate, bifarious, secund, recurved, villous ramifications of numerous small, pale yellow, delightfully fragrant flowers. *Bractes* cordate, acute, villous, caducous. *Calyx* five-leaved; *leaflets* unequal, ovate, villous, permanent, the two largest increasing into two large oblong, obtuse, membranaceous wings, by the time the pericarpium is full grown. *Corol* one-petalled, contorted. *Tube* short, campanulate. *Border* of five oblique, sublinear, oblong, spreading divisions, with their margins revolute, curled, and somewhat villous. *Filaments* ten, about as long as the tube of the corol, and inserted by broad, conical, fleshy bases, into its bottom, alternately larger and bifid. *Anthers* fifteen, two-lobed, with a subulate point from the apex of each, or as in *Asarum* the anthers may be said to adhere to the filaments below their apices. *Germ* superior, ovate, three-celled; *cells* three-seeded, attached to the top of the axis. *Style* straight, the length of the stamens. *Stigma* simple. *Capsule* ovate, pointed, one-celled, evalvular, of a tender texture, closely enveloping a single seed of the same shape and size, outwardly covered with the permanent calyx, two of the leaflets of which are now enlarged into two linear oblong, obtuse, tough, membranaceous, nervous wings, many times longer than the seeds.

The above described tree is nearly allied to my *Shorea*, as well as to the wood oil tree, Dipterocarpus of the Malay Islands, Pegue and Chittagong. It differs from the first in having only two of the five leaflets of the calyx increasing into wings, in having a more petalous corol, and from *Shorea* in the stamina.

I am inclined to think *Dammara selanica*, *Rumph. Herbar. Amb. vol.* 2. *p.* 168. *t.* 56, is of the same natural order, particularly as in some parts of India, very large quantities of a resinous substance are also collected

from the *Shoreas*, and used in the Marine yards, as a substitute for pitch.

2. H. *eglandulosa. R.*

Leaves ovate, oblong, obtusely acuminate, no glands in the axills of the veins.

A very beautiful large tree, a native of the hills of Tipperah, from thence plants have been introduced into the Botanic garden twelve years, and are not more than ten or twelve feet high though perfectly healthy. *Trunk* perfectly straight, as are the branches, which are scattered equally all round, spreading and dividing much, but never drooping; the bark in this species is of a greyish colour whereas in *odorata* it is dark brown, which mark alone is sufficient to distinguish them.

3. H. *scaphula. R.*

Leaves elliptic, entire, smooth. *Panicles* terminal. *Stamina* inserted on the margin of an expanded receptacle in which the germ is inserted.

Boil shor*a* is the vernacular name in Mascal Island where the tree is indigenous and its trunk so immensely large, as to be made into canoes by the Mug inhabitants. Flowering time January.

DIPTEROCARPUS. Gært.

GEN. CHAR. *Calyx* one-leaved, permanent, two of the five divisions of its border large, and growing with the pericarp into two very long, scariose wings. *Corol* five-petalled. *Germ* superior, three-celled; *cells* two-seeded; *attachment* interior. *Nut* ovate, one-celled, one-seeded. *Embryo* inverse, no perisperm.

This genus is so nearly related to *Shorea* and *Hopea*, as to induce a belief that they might all be referred to one, but a nearer inspection of the calyx and corol of each

will I think justify their being considered three very well defined genera, provided we admit that the *Monophyllus* and *polyphyllus*, *calyx* and *corol* ought to constitute genera, even though they agree in the rest of the character and habit.

1. D. *turbinatus. Gært. Sem.* 3. *t.* 188.

Spikes axillary, drooping. *Leaves* ovate-oblong, glossy and ribbed. *Body* of the *calyx* without wings, or angles. *Anthers* thirty, bristle-pointed.

Beng. Tileey*a*-gurjun about Tipperah and Chittagong

A native of Chittagong, Tipperah, Pegue, &c. to the eastward of Bengal, where it grows to be an immense tree. Flowering time the beginning of the hot season; the seed ripens in June.

Trunk straight throughout, to the very top of the tree, and growing to an immense size, even so large as to be made into canoes that will carry an hundred men. *Bark* deeply cracked. *Branches*, the inferior ones spreading, the superior ones ascending. *Branchlets* bifarious. *Young shoots* hoary, and marked with scars of the fallen stipules. *Leaves* alternate, short-petalled, bifarious, ovate-oblong, some entire, some waved, and some are even serrate or dentate, smooth on both sides, of a deep shining, glossy green. *Veins* many, straight, simple and parallel, nearly as in *Dillenia indica;* from four to twelve inches long. *Stipules* within the leaves, very large, sword-shaped, downy, caducous. *Spikes* axillary, drooping, solitary, shorter than the leaves, smooth. *Flowers* solitary, remote, alternate, large, white, with a very slight tinge of red. *Calyx* one-leaved; tube rather gibbous. *Border* five-parted, irregular; two of the divisions being much larger than the other three, and continuing to increase till the seed is ripe. *Petals* five, narrow, obliquely wedge-shaped, smooth on both sides, and entire, except that sometimes they are emarginate. *Filaments* about thirty, short, inserted

round the base of the germ. *Anthers* ensiform, each ending in a long, tapering acute point approaching, to the habit of *Vateria Shorea* and *Hopea.* *Germ* superior, ovate, three-celled, with the ovula in each cell attached to the upper end of the axis. *Style* erect, as long as the stamens. *Stigma* three-toothed. *Capsule* ovate, pointed, one-celled, one-valved of a tender consistence, covered with a little short, soft hairy down, enveloped in the enlarged base of the even calyx, the two larger divisions of its border become two, very large, linear, oblong, scarious wings, beautifully reticulated with veins and nerves. *Seed* solitary, of the shape of the capsule, the radicle issues from its apex leaving the two large cotyledons in the ground.

This tree is famous all over the eastern parts of India and the Malay Islands, on account of its yielding a thin liquid balsam, commonly called wood oil, which is much used for painting ships, houses, &c.

To procure the balsam, a large notch is cut into the trunk of the tree, near the earth (say about thirty inches from the ground,) where a fire is kept up until the wound is charred, soon after which the liquid begins to oose out. A small gutter is cut in the wood to conduct the liquid into a vessel placed to receive it. The average produce of the best trees during the season, is said to be sometimes forty gallons. It is found necessary, every three or four weeks, to cut off the old charred surfaces, and burn it afresh; in large healthy trees abounding in balsam, they even cut a second notch in some other part of the tree, and char it as the first. These operations are performed during the months of November, December, January and February. Should any of the trees appear sickly the following season, one or more years respite is given them.

2. D. *costatus. Gært. Sem.* 3. 50. *t.* 187.

Tender parts hairy. *Leaves* linear, oblong; *base* round-

ed, acuminate, hairy underneath. *Stipules* small and hirsute. *Belly* of the calyx five-ribbed, and a little hairy.

A native of the coast south of Chittagong, where it is called Tileey*a*-gujr*u*n: like the other species it grows to be a tree of the first magnitude, and also furnishes the balsam called wood-oil, and is next in proportion to *incanus*. It blossoms in the cold season, and the seed ripens in April and May.

3. D. *incanus. R.*

All the tender parts hairy. *Leaves* ovate, with the *base* somewhat tapering, obtuse, soft, and villous; *spikes*, axillary, half the length of the leaves; belly of the calyx simply five-winged.

Gurj*u*n, is the vernacular name at Chittagong, where the tree grows to a great size, and is said to furnish the largest proportion of the best sort of *wood oil* or balsam mentioned in my description of *D. turbinatus*. Flowering time November and December, and the seed ripens in April.

4. D. *alatus. R.*

Tender parts hairy. *Leaves* from ovate-oblong, to ovate-cordate, acuminate, smooth, and opaque above, harsh underneath, margins ciliate. *Belly* of the calyx five-winged.

An immensely large tree, a native of Mascal Island, and the neighbouring coast, Pegue, &c. It is the wood oil tree of the latter country.

5. D. *tuberculatus. R.*

Body of the calyx spherical, with five knobs under its five fissures on the outside.

A native of Chittagong where it flowers about the beginning of the hot season, and the seed ripens in June.

6. D. *pilosus. R.*

Tender shoots very hairy. *Leaves* petioled, oblong, acuminate; *base* rounded, hairy underneath; *stipules* remarkably long, and very hairy.

A large tree, a native of Mascal Island.

SHOREA. R.

GEN. CHAR. *Calyx*, five-leaved, permanent, enlarging into five long wings. *Corol* five-petalled. *Germ* superior, three-celled; *cells* two-seeded; *attachment* superior. *Nut* one-seeded. *Embryo* inverse, without perisperm.

In honour of the Right Honourable Lord Teignmouth, late Governor General of Bengal.

1. S. *robusta. Gært. Sem.* 3. *t.* 186. *Cor. pl.* 3. *N.* 212.

Leaves short-petioled, cordate-oblong; *stipules* falcate. *Panicles* terminal and axillary. *Stamina* from twenty-five to thirty.

Sal*a*, *Uswukurnika*, the *Sunscrit* names.

Beng. and *Hind.* Sal.

An immense timber tree, a native of Morung. Flowers during the hot season. Seed ripens in June.

In April 1810, a young tree flowered in the Botanic garden at Calcutta, and is the first that has blossomed, though there are young trees in the garden of from twelve to thirteen years growth. The original description of this tree is very correct, all I can add is that the *stipules* are large and falcate. The *stamina* about fifty. *Stigma* three-toothed. *Germ* three-celled, with two ovula in each attached to the top of the axis. The *seed* constantly single. The *Embryo* inverse, and without perisperm. *Cary alobis. Gært. Sem.* 1. 215. *t.* 45. must at least belong to the same natural order of *Hopea Dipterocarpus*, *Shorea* and *Vateria.*

2. S. *camphorifera*. *R.*

Leaves ovate, acuminate, parallel, veined, smooth. *Flowers* axillary.

Camphor-tree of Sumatra, or that from which both the native camphor, and camphor-oil are obtained on that island.

To John Prince, Esq. of Tappanooly, we are obliged for the following memorandum.

"This tree grows spontaneously in the forests, and is to be found in abundance from the back of Ayers Bongry, as far north as Bacongan, a distance of twenty-five miles. It may be classed among the largest trees that grow on this coast, several within daily view, measuring six or seven feet diameter. Before it acquires such dimensions it is conjectured to be many years old, but it will produce camphor at a much earlier period. A few of the trees do not exceed two or two and a half feet in diameter. The same tree which yields the oil, would have produced camphor if unmolested, the former being supposed to be the first stage of the latter's forming, and is consequently found in younger trees. The natives have no certain meàns of ascertaining the tree which produces either the one or the other, although there are some men styled Toongoo Nir Kapoor, who pretend to that knowledge, but they cannot give any reasons for their judgment beyond favourable dreams, which superstition has rendered infallible; and it must be admitted that the success of this description of people, in discovering and procuring, is greater than that of the commonality of those who go in search of the camphor; the distinction may have arisen from the peculiar favour of fortune to some individuals over others, as in most other circumstances of life, from whence they have acquired a celebrity, otherwise they could give some rational reason for their superior success. Both oil and camphor are found in the heart of the tree, occupying a vacuum, which in others is frequently

filled with pith; but it does not extend to the whole length; on the contrary, they are found in small portions of a foot or a foot and half long at certain distances. The method of extracting the oil is merely by making a deep incision with a Malay axe in the tree, about fourteen or eighteen feet from the ground, till near the heart, when a deeper incision is made with a small aperture, and the oil if any in the tree immediately gushes out, and is received in bamboos or any other utensil better approved of. In this manner a party proceeds through the woods, wounding the camphor trees till they attain their object. The camphor is procured in pretty nearly the same way. The trees are cut to the heart about the same height from the ground as in the former instance, till the camphor is seen; hundreds may be mutilated before the sought for tree is discovered; when attained it is felled, and cut into junks of a fathom long, which are again split, and the camphor is found in the heart occupying a space, in circumference of the thickness of a man's arm. The produce of a middling sized tree is about eight China catties or nearly eleven pounds and of a large one, double that quantity. The camphor thus found is called the Tentory. It is often the case that the trees which have been cut and left standing in that state, will produce camphor in seven or eight years after, which is distinguished by the name of Oogar, but is inferior in appearance though of the same quality. The sorts of camphor called belly and foot are the scraping of the wood which surrounds it."

2. S. *Tumbugaia. R.*

Leaves ovate cordate, long-petioled. *Panicles* terminal. *Stamina* about one hundred, with bearded anthers.

Tam. Tumbugai.

A large timber tree, a native of the Balaghat mountains; it blossoms in the beginning of the hot season, and the *seed* ripens in June. Both these species yield a large

quantity of the resin commonly called Dammar, in India, and very generally used as a substitute for pitch in the Marine yards. The best species are also frequently used instead of the common incense, Benzoin, in the temples of the natives. *Rumphius's Dammara Selanica. Herb. Amb.* 2. 173. t. 56. seems a species of this genus.

3. S. *Talura. R.*

Leaves oblong, obtuse. *Stipules* linear, falcate. *Panicles* axillary and lateral. *Stamina* fifteen.

Tam. Talura.

This is also a timber tree, a native of the Balaghat mountains, where it blossoms during the dry winds and ripens its seed in June. In S. *robusta* the germ is trilocular, with two ovula in each, attached to the top of the axis. Compare with *Vatica Chinensis, Smith. ic. ined.* 36. 36. *t.*

4. S. *longisperma. R.*

Nut sub-cylindric.

A native of Prince of Wales' island.

GARCINIA. Schreb. gen. n. 814.

Gen. Char. *Polygamous, or Dioecous. Calyx* four-leaved. *Corol* four-petalled. *Germ* superior, from four to twelve-celled, with one ovula in each cell, attached to the axis. *Berry* one-celled, from four to twelve-seeded, crowned with the peltate stigma. *Seeds* enveloped in a pulpy aril. *Embryo* simple, erect, furnished with an ample perisperm.

1. *G. Mangostana. Willd.* 2. *p.* 838.

Polygamous. *Leaves* petioled, from oblong to broad-lanceolate; *flowers* terminal, peduncled, female hermaphrodite solitary, male fascicled. *Berries* spherical with the surface even, and containing as far as eight seeds.

Mangostana Garcinia. Gært. sem. 2. 105. *t.* 105.

Mangostana. Rumph. Amb. 1. *t.* 43. is a bad representation of the female hermaphrodite, or fertile tree.

A native of the Malay Peninsula, and of the Islands to the eastward of the Bay of Bengal, where they often grow to be trees of a large size, with a straight trunk, and numerous spreading opposite branches, and branchlets forming an elegant, conical head. It is in flower and fruit great part of the year. *Leaves* opposite, petioled, oblong, and broad-lanceolar, entire, rather obtuse, having both sides polished, of a firm texture, from six to eight inches long, and from two to four broad. *Petioles* short, marked with rugæ and having a fleshy protuberance on the inside. *Stipules* none.

Male. *Flowers* terminal, pretty long-peduncled, generally three, five, or nine together, large, of a colour which is a mixture of red, green, and yellow. *Bractes* several about the insertion of the peduncles, and round the flower buds themselves, roundish, concave, scariose. *Calyx* of two unequal pairs, of round, concave, spreading *leaflets*. *Petals* four, oval, fleshy, of a yellowish red on the inside and a greenish red on the outside. *Stamina* numerous, collected on the four lobes of a large fleshy receptacle, round the abortive column. *Filaments* short. *Anthers* ovate, oblong, recurved. *Germ* none, but in the centre an inverted, truncated, conical, fleshy body, scarcely rising above the elevated anthers.

Female Hermaphrodite. Flowers sometimes on the same tree with the male, but I believe more generally on a separate one, solitary, rarely tern, peduncled, larger than the male, and of a deeper colour. *Calyx* and *corol* as in the male, the former permanent. *Filaments* many, slender, half the length of the germ, and inserted round its base. *Anthers* irregular, small, and seemingly abortive. *Germ* superior, round, from six to eight-celled, with one ovula in each, attached to the middle of the axis, the

part which now forms the lining of the cells and their partitions, in the ripe state, separating readily from the inside of the cortex becomes attached to the seed forming the edible aril; this is exactly the case in all the other species examined by me, hence, when ripe, I consider it a one-celled fruit. *Style* none. *Stigma* peltate, from six to eight-lobed, permanent. *Berry* spherical, of the size of a pretty large apple, crowned with the stigma, having the surface even, (in the other species it is more or less torose as in the common melon,) one-celled. *Cortex* thick, firm, though somewhat spongy, of a dull crimson colour, or between that and a brick colour; taste powerfully astringent. *Seeds* as far as eight, in shape and size like those of the other species, but the fleshy envelope, or aril, is more abundant than in any other, delicately white, and delicious to the taste. *Integument* proper, single and veined. *Perisperm* conform to the seed, firm, entire. *Embryo* simple, erect, filiform, extending through the centre of the perisperm its whole length, and not readily detected until vegetation begins, when a slender perishable root proceeds from the base and the scaly plumula from the apex which lengthens fast, and throws out the chief root from its base, as in the *Palms*; soon after this provision is established, the original, slender radicle perishes; it is the same with all the other species of this genus, as well as of *Barringtonia* and *Xanthochymus*.

From the earliest accounts we have of this charming tree and its delicious fruit; we learn that all the innumerable attempts hitherto made to familiarize it to other countries, besides those in which it is placed by nature, have uniformly proved unsuccessful. For these thirty-five years past I have laboured in vain to make it grow and be fruitful on the continent of India. The plant has uniformly become sickly when removed to the north or west of the Bay of Bengal, and rarely rises beyond the height of two or three feet before it perishes.

2. G. *Cambogia. Willd.* 2. 848.

Leaves lanceolar. *Flowers* terminal, sub-sessile, solitary. *Stigma* from eight to ten-lobed. *Berry* torulose, from eight to ten-seeded.

Mangostana Cambogia. Gært. sem. 2. 106. *t.* 103.

Coddam-Pulli. Rheed. Mal. 1. *t.* 24. is no doubt this very tree, for *Van Rheed* says the fruit is on a peduncle an inch long, yet his figure places the leaves close to the (terminal) fruit; so that it is evident the extremity of the branchlet must have been considered the peduncle. In my G. *Zeylanica* the flowers are axillary.

This grows to be a tree of considerable size in the forests of Travancore, where it is known to the natives by the name *Ghorka Pulli,* consequently we may conclude it to be *Carca-pulli* of Bauhin, Acosta, &c. It flowers in February and March, and its fruit ripens in June and July.

3. G. *Zeylanica. R.*

Dioceous. *Leaves* broad-lanceolar. *Flowers* axillary; *male* subtern and peduncled; *female* sub-sessile and solitary. *Stigma* varicose. *Berry* with as far as eight-seeds.

Ghorka or korka of the Cingalese, which is rather an indefinite name, as with the help of an adjective it would apply to various trees and their fruits.

This species is a native of Ceylon, and from thence was introduced into the Missionaries garden at Tranquebar, where the trees grow freely and acquire a middling size, and like most of the other individuals of this whole natural order, yield an inferior sort of Gamboge. *Leaves* opposite, short-petioled, from broad-lanceolar to oblong ventricose, smooth, of a deep lucid green on both sides from four to six inches long, and about two broad. *Petioles* about half an inch long, channelled, smooth.

MALE. *Peduncles* axillary and terminal, several together, one-flowered, smooth, from half an inch to an inch

in length. *Bracte* an ovate, concave one embraces the base of each peduncle. *Calyx* four-leaved. *Leaflets* round and concave, the exterior pair smaller. *Petals* four, oblong, concave, expanding, double the length of the calyx. *Filaments* about thirty, short, inserted in a fleshy receptacle, which also elevates a small headed column or body in the centre. *Anthers* twin.

FEMALE. *Flowers* axillary and terminal, solitary, subsessile, rather larger than the male.

Calyx and *corol* as in the male. *Filaments* six, seven, or eight, about one for each cell of the germ, slender, short, each headed with something like a small abortive anther. *Germ* round, with from six to eight sulcæate, from six to eight-celled, with an ovula in each attached to the middle of the axis. The part which becomes the aril in the ripe fruit, now forms the wall of the cells. *Style* none. *Stigma* the aril of each seed, now peltate, verrucose, no evident division into lobes. *Berry* the size of a small orange, smooth, when ripe yellow, somewhat torose, having an elevation over each seed, one-celled, crowned with the wonted stigma. *Seeds* as far as eight, each enveloped in its proper succulent aril, but not otherwise separated in the berry, semi-ovate. *Integument* seemingly single, though with care it may be divided into two, tough, veined coats. *Perisperm* and *embryo* exactly as in the species already described.

3. G. *Cowa. R.*

Dioecous. *Leaves* broad-lanceolar. *Flowers* terminal, *male* sub-umbelled; the *female* has one, three, or five flowers, with four, five or ten-cleft sets of abortive stamina. *Stigma* from six to eight-lobed. *Berry* torulose, from four to eight-seeded.

Hind. Cowa.

The tree is of a middle size and handsome; it yields an inferior sort of Gamboge, and the fruit edible, though not

the most palatable. It is a native of Chittagong, and flowers in February; the fruit ripens in June.

4. G. *lanceofœlia. R.*

Leaves narrow, lanceolar, acute. *Flowers* terminal, solitary. *Stigma,* from six to eight-lobed. *Berry* turbinate, with as far as eight seeds.

A small tree, a native of Silhet, where it is known to the natives by the name Kirindur, and by them cultivated for the fruit, which they are fond of. Flowering time in February; its fruit ripens in July.

5. G. *Kydia. R.*

Dioecous. *Leaves* broad-lanceolar.

Male flowers in terminal and lateral umbellets; *female* also terminal and lateral, but solitary, and sessile, with four sets of unequal, abortive stamina, alternate with the petals. *Berry* from four to eight-seeded, apex depressed with an elevated nipple-like centre, crowned with the stigma.

A native of the Andaman Islands, where it was discovered by Col. Alexander Kyd, and by him introduced into the Botanic garden at Calcutta in 1794, where, when about ten years old, it began to blossom in February, and the fruit to ripen in July. *Trunk* straight, to the top of the tree, as in the common fir, &c. and in trees sixteen years old twenty-seven inches in circumference at four feet from the ground. *Branches* numerous, spreading far and regularly. *Bark* pretty smooth, of greyish brown; if it be wounded, a yellow exudation frequently takes place, which hardens into an inferior kind of gamboge; the extreme height of young trees about thirty feet. *Leaves* opposite, short-petioled, broad-lanceolar, acute, entire, firm and polished, from four to six inches long, and from one to one and a half broad. *Stipules* no other than a little black or brown gland on each side of the petioles.

MALE. *Flowers* in little terminal umbellets, pretty large, yellow, and smooth in every part. *Peduncles* nearly as large as the petioles, clavate, one-flowered. *Calyx* four, equal, ovate, obtuse, fleshy, smooth leaves. *Stamina* numerous, inserted on a somewhat four-lobed, large, elevated, convex, fleshy receptacle, which occupies the whole centre of the flower. *Filaments* very short. Anthers four-sided, with a small polliniferous cell in each angle. *Germ*, no vestige of one.

FEMALE. *Flowers* terminal, and lateral, solitary, sessile. *Calyx* and *corol* as in the *Male*. *Stamina* four, small, unequally bifid, or trifid, filaments round the germ, alternate with the petals; *divisions*, subequitant, and ending in a small gland something like an anther. *Germ* from six to eight-lobed, from six to eight-celled; that part which becomes the aril in the ripe fruit now forms the walls of the cells, and is of a paler colour than the rest. *Style* scarcely any. *Stigma* of from six to eight spreading, variously lobate, glandular lobes. *Berry* globular, torulose, of the size of a small orange, smooth, of a deep yellow when ripe, one-celled, with the *vertex* much depressed, in which rises the nipple-shaped apex, crowned with the from six to eight-lobed stigma; *seeds* as far as eight, semiovate, the inside being thin and straight. *Integument* single, tough and veined, the whole enveloped in a large, fleshy, acid aril. *Perisperm* conform to the seed, firm. *Embryo* simple, &c. as in the former species.

This elegant tree is so very like my G. *Cowa*, as not to be distinguished except by the female inflorescence and shape of the fruit, which in size and quality are the same, viz. an exceedingly sharp but pleasant acid, and like the rest of the genus, the aril is by far the more palatable part.

6. G. *purpurea*. *R.*

Leaves lanceolar, obtuse. *Stigma* eight-lobed. *Berry*

spherical, of a deep purple throughout, with as far as eight seeds. Of this evidently very distinct species I have only specimens with leaves and the ripe fruit sent by Dr. Berry, under the name *Mate mangostan,* which is found in gardens only, and supposed to have been originally brought from the Eastern Archipelago. It differs from every other species in the whole fruit, which is about the size of a small orange, being throughout of a deep purple colour, even the proper pulpy aril of the seeds.

7. G. *pedunculata. R.*

Dioceous. *Leaves* oblong with parallel veins. *Flowers* terminal, long-peduncled, *male* numerous, *female* sub-solitary, with nectarial filaments united into five bodies. *Berry* ten-seeded.

Tik*u*l or Tik*oo*r.

A native of Rungpoor, where the tree is indigenous. The following description was taken from fresh specimens, sent from thence by Mr. Todd, who writes that the trees are high, perhaps sixty feet, and of stately growth, some young ones planted in a garden there, were in seven years, twenty feet high with a trunk, twenty-five inches in circumference, covered with bark of a spongy texture and inwardly of a flesh colour. Flowering time from January till March. The fruit ripens in April, May and June. *Leaves* opposite, short-petioled, oblong and obovate-oblong, entire, obtuse, smooth on both sides, with large and parallel veins, from six to twelve inches long. *Flowers* terminal, peduncled; *male* numerous, forming small trichomous panicles; *female* solitary, and also long-peduncled. *Bractes* opposite, one or more pairs of the divisions of the *male* panicles, and also at the base at the long proper peduncles of both male and female flowers. The *male* flowers so far as I can see are always on a separate tree. *Calyx* of two opposite pairs of nearly equal cordate smooth, concave, fleshy leaflets. *Petals* four, ob-

long, alternate with the leaflets of the calyx, and nearly of the same length. *Filaments* numerous, short, collected on a large elevated four-sided, fleshy receptacle. *Anthers* twin. *Pistil* no other than an abortive gland immersed in the fleshy receptacle of the stamens. *Female calyx* and *corol* as in the male. *Nectary*, or abortive stamens, a membranous ring surrounding the base of the germ, which divides into twenty or thirty, compressed filaments, ending in enlarged, glandular heads, not unlike anthers. This ring is soon split into various portions by the growth of the germ and then appears like the phalanges of filaments in the class *Polyadelphia.* *Germ* superior, globular. *Style* none. *Stigma* peltate, about ten-lobed. *Berry* large, two pounds weight each, round, smooth, when ripe of a rich yellow colour, and exceedingly acid. *Seeds* about ten, reniform, each inclosed in its own, proper, fleshy, succulent envelope, or aril, within which I always find a quantity of soft yellow resin.

The fleshy part of the fruit which covers the seeds and their proper juicy envelope, or aril, is in large quantity, of a firm texture and of a very sharp, pleasant, acid taste. It is used by the natives in their curries, and for acidulating water. If cut into slices, and dried, it retains its qualities for years and might be most advantageously employed during long sea-voyages, as a succedaneum for lemons, or limes, to put into various messes, where salt meat is employed, &c.

8. G. *paniculata. R.*

Dioceous. *Leaves* oblong. *Male flowers* panicled. *female* spiked, and without a nectary. *Berry* spherical, four-seeded.

This tree, found in a few gardens about Calcutta, was orginally from Silhet, where the tree is indigenous, and known to the natives by the name Boobee-Kowa; about Calcutta, they are smaller than in their native soil. Flow-

ering time the cold season ; the fruit ripens in July. *Trunk* straight, *branches* numerous, erect, and ascending ; *branch-lets* cross-armed. *Bark* pretty smooth, of a dark-brownish colour. *Leaves* opposite, decussated ; short-petioled, oblong and oblong-lanceolate, entire, obtuse-pointed, or emarginate, smooth and shining on both sides ; about six inches long and from two to three broad. *Male* flowers very numerous, white, collected on large brachiate panicles. *Calyx* and *corol* as in the genus. *Stamina* numerous, on an elevated, glandular, central receptacle. *Female* flowers on a distinct tree. *Spikes* terminal, short, rigid, supporting a few, generally five or seven rigidly sessile, decussate, small, pure white flowers. *Calyx* and *corol* as in the genus ; no nectary. *Stamens,* rarely the rudiments of one or two may be present. *Germ* oval. *Style* none. *Stigma* large, convex, entire, dotted with glands. *Berry* round, of the size of a large cherry, when ripe yellow, succulent, and containing generally four reniform seeds, each immersed in a pulpy aril. This pulpy aril is palatable ; its taste more like that of the mangosteen than any thing else I can compare it to.

9, G. *pictoria. R.*

Leaves oblong, ventricose. *Flowers* axillary, solitary, sessile. *Stigma* four-lobed. *Berry* with as far as four seeds.

This tree is a native of the highest parts of Wynaad, where the soil is a stiff whitish clay ; where there is constant moisture from fogs during the dry season, and abundant rains during the wet. Flowering time, on their native soil, February ; the fruit ripens in May and June. Mr. Dyer, the Surgeon at Tellicherry writes me, that many attempts have been made to rear this tree on low lands, near the coasts, but that they uniformly perish in a short time, being transported from their native soil to their gardens. The same gentleman sent several small plants to

the Botanic garden in Bengal, and others have been reared from seed received from the same gentleman; but both sorts soon died. I have therefore much reason to think the *Arbor Zeylanica of Burm. Flor. Zeyl. p.* 27, is different, for though the fruit of both is small, and contains four seeds, yet that of Ceylon has round leaves which is by no means the case in our Wynaad tree; and I am further inclined to think that this very tree of Burman is now in this garden, at least I have several plants of one which was reared from seed, sent from Ceylon by General Macdowall, about nine years ago, under the Cingalese name *Ambul ghoorka*, they are now beautiful small trees, with polished, thick, obtuse, oval leaves; two of them have produced male flowers abundantly, and from their situation and structure I think will be a new species of *Xanthochymus*.

Tree tall, say sixty feet high, of a conical shape, and very full of branches. *Bark* pretty thick, scabrous and ramous on the outside of a dark ferruginous colour, intermixed with many yellow specks, and through its substance, particularly on the inside, considerable masses of gamboge are found. *Young shoots* somewhat angular, smooth, polished, of a deep green. *Leaves* opposite, short-petioled, oblong-ventricose, rather acute, entire, smooth on both sides, and of a firm texture, from three to four inches long by one and a half or two broad. *Hermaphrodite* flowers, axillary, over the axills of the former year, solitary, sessile, of a middling size, and yellow colour. *Bractes* some very short, obscure scales, round the insertion of the flowers. *Calyx* of two unequal pairs of concave, obtuse leaflets, permanent. *Petals* four, oval, longer than the calyx. *Filaments* united into four bodies, which are again united at the base into a narrow ring, round the bottom of the young germ, above each body is divided into from two to six single unequal, short filaments. *Anthers* from ten to fifteen, oblong, two-lobed, and seemingly fertile. *Germ* superior, round, four-celled, with one

ovulum in each attached to the axis, a little above its middle. *Style* none. *Stigma* four-lobed, permanent. *Berry* size of a large cherry, oval, smooth, very slightly marked with four lobes, crowned with the sessile, four-lobed, verrucose, permanent stigma. *Bark* leathery, pretty thick, and rather spongy, one-celled. *Seeds* four when all ripen, oblong-reniform. *Perisperm* and *embryo* as in the genus. *Male* flowers. *Calyx* and *corolla* as in the female. *Nectarium* none. *Filaments* ntimerous, inserted on the crown of a square fleshy receptacle, in the centre of the flower, clavate, angular. *Anthers* peltate. *Pistillum* no vestige of one.

I have received frequent samples of the *Gamboge* the produce of this tree, from my good correspondent Mr. Samuel Dyer, the Surgeon at Tellicherry, and have uniformly found it even in its crude, unrefined state, superior in colour, while recent, to every other kind I have yet tried, but not so permanent as that from China.

10. G. *cornea. Willd.* 2. 849.

Dioecous. *Leaves* opposite, oblong. *Flowers* terminal; *male* many-fold; *female* solitary. *Stigma* four-lobed. *Berry* four-seeded.

Lignum corneum. *Rumph. Amb.* 3. *p.* 55. *t.* 30.

Two small, beautiful trees, one male, the other female, of about twenty years growth are found in the garden of the late Colonel Robt. Kyd, near Calcutta. said to have been originally, from one of the Malay Islands. They blossom in January and February; and the female ripens its fruit in May and June. *Trunk* straight. *Branches* opposite, many of them drooping; height of the whole trees about twenty feet. *Leaves* opposite, petioled, drooping, oblong, entire, smooth, of a deep shining green on both sides; from four to six inches long and about two broad. *Petioles* about three quarters of an inch long, round, smooth.

MALE FLOWERS terminal, peduncled, from three to nine-fold, pretty large, of a pale yellow colour and without smell. *Bractes* lanceolate, caducous. *Calyx* of four roundish expanding, concave, withering leaflets. *Petals* four, nearly oval, concave, expanding, twice the size of the calyx, of a pale-yellow colour. *Stamens* very numerous, inserted on a fleshy four-lobed receptacle. *Filaments* very short, indeed scarcely any. *Anthers* sub-ovate, small, recurved. *Germ* none. *Style* four-seeded, clavate. *Stigma* a large glutinous, abortive yellow gland.

FEMALE FLOWERS on a separate tree, terminal, sessile, and always solitary on our single tree. *Calyx* and *corol* as in the male. *Stamens* entirely wanting. *Germ* above, ovate, four-celled, with one ovulum in each attached to the axis. *Style* short and thick. *Stigma* large, four-lobed and covered with glutinous glands. *Berry* nearly round, of the size of a medlar, covered with a dark purple, juiceless bark, and crowned with a rugose, rather elevated stigma. *Seeds* as far as four each, enveloped in a small portion of a pleasant sub-acid, white pulp, like that of the real *Mangosteen*. *Perisperm*, &c. as in the other species already described.

From wounds made in the tree, or unripe fruit, there flows a yellow-juice, which soon hardens into a gum resin of a tolerably good yellow colour. In this country the plant is an exotic, of course there is no information to be procured from the natives regarding the quantity procurable, nor the uses to which it is applied in its native soil; we must therefore depend on what Rumphius says, if this be his tree.

XANTHOCHYMUS. R.

GEN. CHAR. *Calyx* five-leaved. *Corol* five-petalled. *Nectaries* five, alternate with the five polyadelphous filaments. *Germ* from three to five-celled, one ovulum in

each attached in the middle of the axis. *Berry* superior, one-celled, with from one to five seeds, each enveloped in a pulpy aril. *Embryo* simple, erect, in ample perisperm.

1. X. *dulcis. R.*

Polygamous. *Leaves* opposite oblong. *Flowers* fascicled, lateral. *Corols* globular. *Fruit* oval, obtuse, from one to five-seeded.

A native of the Molucca islands; from thence introduced into the Botanic garden at Calcutta as a species of *Mangosteen.* Flowering time in Bengal June and July. The fruit ripens about the beginning of the cool season.

The trees in the Botanic garden are but small, being only eight years old; but very handsome, and the fruit palatable. *Trunk* quite straight to the top of the tree. *Bark* smooth, olive-coloured. *Branches* and *branchlets* opposite, expanding, the latter grooved and keeled; the height of trees eight years old about ten feet. *Leaves* opposite, short-petioled, oblong, entire, often pointed; texture hard, both surfaces polished, about six inches long, and from two to three broad. *Petioles* short, transversely wrinkled at the base; on the inside a fleshy ligule, or protuberance, which is I believe common to the whole of this order (Guttifero.) *Stipules* none. *Flowers* in small fascicles, from the axills of one or two-year old branchlets, peduncled, of a middling size, or nearly globular, greenish white, inodorous. *Calyx* of from four to five or six unequal, round concave leaves, as long as the stamina, contracted into a globe, with a small opening at the apex when most expanded. *Nectary* in the *male*, a truncated porous, yellow body, with five lobes projecting between the insertion of the five filaments. In the *hermaphrodite* are five yellow porous glands, alternate with the filaments round the base of the germ. *Filaments* in both, are five incurved, broad, flat bodies divided at the apex into six,

seven, or eight short portions, each of which supports a twin anther. *Germ* in the *hermaphrodite* ovate, smooth, five-celled, with one ovulum in each, attached to the middle of the axis. *Style* scarcely any. *Stigma* five-lobed. *Berry* the size of an apple, from round to oval, obtuse, smooth, bright yellow when ripe, fleshy, the flesh or pulp in quantity, yellow, and rather sweet, one-celled. *Seeds* from one to five, oblong, rather pointed at the base on the inside, where a large, oblong, lighter coloured space marks the attachment. *Integument* single, reticulated with lighter coloured veins, on a dark cinnamon-coloured ground. *Aril* a large portion of the pulp, of rather a softer consistence, somewhat darker colour, and pleasant taste, appertains to each seed, which separates spontaneously with its seed from each other, and from the exterior, thick, fleshy covering when the fruit is perfectly ripe. This is the only edible part not only in this but also in all the species of *Garcinia*. *Perisperm* conform to the seed, of a hard fleshy texture and pale yellowish colour. *Embryo* simple, slender, the length of the perisperm, and scarcely to be distinguished from it till vegetation begins, when the radicle issues from the more pointed base of the seed, and the plumula from its apex. At this stage, a vertical section shows distinctly the form of this body passing through the centre of the seed (as represented by Gærtner in his *Mangostana Cambogia. t.* 105,) into the ligneous part of the plumula and radicle, while the two extremities of the perisperm may be as clearly traced to the cortical part. When vegetation is a little more advanced a more substantial root issues from the base of plumula, as in *monocotyledonous* plants, which increases rapidly while the other from the plumula is well established, and finally perishes.

2. *X. ovalifolius. R.*

Polygamous. *Leaves* oval, polished. *Flowers* in late-

ral fascicles, male and female hermaphrodite mixed. *Germ* three-celled. *Berry* oval (size of a small apple) from one to three-seeded. From Ceylon the seeds of this very elegant, straight, uncommonly ramous tree, were sent by General Hay Macdowall to the Botanic garden at Calcutta, under the Cingalese name *Ambul Ghoorka*, where in from seven to ten years the trees began to blossom abundantly during the whole of the hot season, but did not produce perfectly ripe fruit until the month of July 1812, when they were fully ten years old.

3. X. *pictorius. R. Corom. pl.* 2. *N.* 196.

Leaves opposite, linear-lanceolar. *Flowers* in lateral fascicles. *Berry* ovate-pointed.

Beng. and *Hind.* Dampel.

Teling. Iwara memadee.

Cing. Rata ghorka.

A native of the mountainous districts in India. Flowers during the hot season. Fruit ripens in November and December.

This beautiful tree yields a green fruit, and a large quantity of indifferent gamboge. It is truly guttiferous, and but little removed in its natural habit, from the *Garcinias.*

BARRINGTONIA. Schreb. gen. n. 1150.

GEN. CHAR. *Calyx* simple, from two to four-cleft, permanent. *Corol* one or four-petalled, inserted on the short tube of the stamina. *Germ* inferior, two-celled, (4. Gært.) *cells* many seeded; *attachment* interior.* *Berry* dry, one-

* Or it may be called one-petalled, and the stamina inserted on the short tube of the corol, as in *Eugenia* the germ has two cells, with many ovula in each, and exactly as in the real *Guttiferæ*, the embryo is perfectly simple (monocotylodonous) and furnished with an ample perisperm.

celled, one-seeded. *Embryo* simple, inverse, length of the ample perisperm.

1. B. *racemosa*. *R.*

Leaves broad-lanceolar, serrulate. *Racemes* pendulous. *Calyces* from two to three-parted. *Fruit* ovate, four-sided, with rounded angles.

Eugenia *racemosa*. *Linn. sp. pl. ed. Willd.* 2. 966.

Samstravadi. *Rheed. Mal.* 4. *t.* 6.

Butonica *sylvestris alba*. *Rumph. Amb.* 3. *t.* 116.

A stout timber tree, a native of the Molucca Islands, the Delta of the Ganges, Malabar, &c. In the Botanic garden it blossoms during the cool season, and the seed takes above half a year to ripen. *Trunk* pretty straight. *Branches*, numerous and spreading much. *Bark* on the younger part, a dark ash-colour; on the older scabrous, and darker coloured. *Leaves* alternate, short-petioled, broad-lanceolar, acuminate, serrulate or crenulate; smooth on both sides; from three to twelve inches long, and from one to four broad. *Racemes* sometimes terminal, sometimes from the large branches, pendulous, coloured and smooth. *Flowers* remote, short-pedicelled, large, pale pink. *Bractes* minute, caducous. *Calyx* superior, two or three-parted, smooth, permanent. *Petals* four, inserted on the base of the short tube which is formed by the base of the filaments united, and dropping off with them in one body, oblong, smooth, margins revolute. *Filaments* numerous, longer than the petals. *Germ* inferior, turbinate, two-celled, with several ovula in each attached to the middle of the partition, as in *Eugenia*. *Style* longer than the stamina. *Stigma* simple. *Fruit* drupaceous, of the size of a large pullet's egg, and not unlike one in shape, only somewhat four-sided, pretty smooth on the outside, olive green within, the flesh rather spongy and brown, one-celled. *Seed* solitary, ovate-oblong. *Integuments* scarcely any other than the smooth, dark brown surface of the cell of the pericarpium.

Perisperm conform to the seed, firm, fleshy and white. *Embryo* simple, (as in the *Guttiferous* seeds) lanceolate, length of the perisperm, inverse; when vegetation begins, the *plumula* issues from the base of the fruit, and this part (the simple embryo) forms the ligneous centre of the shoots, while the perisperm furnishes the cortical part and the leaves. *Radicle* superior, (that is, from the apex of the perisperm and embryo, as the plumula is from the base) no appearance of any other cotyledon or cotyledons than the perisperm and embryo. The seeds of *Barringtonia acutangala* have exactly the same conformation. In neither have I observed any thing that can be called a cotyledon except the copious perisperm which performs the same office, for by the elongation of its two extremities, it furnishes the bark and foliage of the young plant, while the opposite end of the *embryo* or central part supplies the wood and pith; it is exactly the same in the several species of *Garcinia* and *Xanthochymus* examined by me, only there the central portion, which I call the embryo, is very slender, and the permanent root proceeds from the base of the plumula as in the plants usually called *monocotyledonous*, while that from the opposite end of the embryo soon perishes, or remains slender compared to the other.

2. B. *acutangula. R.*

Leaves cuneate-obovate, serrulate. *Racemes* pendulous. *Calyx* four-parted. *Fruit* oblong, four-sided, with the angles sharp.

Tsjeria samstravadi. *Rheed. Mal.* 4. *t.* 7.

Eugenia *acutangula. Linn. sp. pl. ed. Willd.* 2. 966.

Stravidium. *Juss. gen. pl.* 361.

Ijul, the Sanscrit name.

Beng. Hijjul.

Meteorus *coccineus. Lourier Cochin Ch.* 499.

Butonica terrestris rubra. *Rumph. Amb.* 3. *t.* 115.

Teling. Cadamic.

This species is common in most parts of India; it grows to be a large handsome tree, in appearance it is more like a regular, well-shaped, middle-sized Oak, than any other tree I have ever met with. It flowers about the beginning of the wet season. Its long pendulous racemes. of scarlet-coloured flowers, give it at that time a most elegant appearance. *Bark* dark-coloured, scabrous, tough and thick.

3. B. *speciosa. Willd.* 3. 845.

Leaves entire. *Flowers* on a terminal thyrse. *Fruit* pyramidally four-sided.

Butonica. *Rumph. Amb.* 3. *t.* 114.

Commersonia *sonnerat. Guin.* 14. *t.* 8. 9.

A large, and beautiful tree, a native of the Malay Archipelago and the South-Sea Islands.

CAREYA. R.

Gen. Char. *Calyx* four-parted. *Corol* four-parted. *Stamina* icosandrous, exterior and interior filaments abortive. *Germ* inferior, semiquadrilocular; *ovula* numerous; *attachment* sub-interior. *Style* single. *Berry* many-seeded. *Seeds* nidulant. *Embryo* simple, length of the ample perisperm.

1. C. *sphærica. R.*

Arboreous. *Leaves* obovate, obtuse, glossy. *Berries* globular and crowned with the inflected flattened segments of the calyx.

A large tree, a native of the mountains of Chittagong. Flowering in April; the fruit ripens in July. The leaves are deciduous just before the flowers expand, and appear with or immediately after them. *Trunk* straight, in young

trees, thirteen years old, about twelve feet to the branches and twenty-four inches in circumference, four feet from the ground. *Branches* scattered, and dividing without order. *Bark* pretty smooth, ash-coloured, and abounding with very strong fibres, fit for cordage; whole height of the young trees about thirty feet. *Leaves* alternate, approximate about the ends of the branches, short-petioled, obovate-oblong, firm and glossy, obtuse-pointed, slightly-crenulate, from eight to twelve inches long, and from four to seven broad. *Stipules* none. *Spikes* or *heads* terminal, sub-globular. *Flowers* large, sessile, crowded, from six to twelve together from the spike or head, expanding in succession at night, and dropping soon after sun-rise, inodorous. *Bractes* tern, embracing the base of the germ on the outside, ovate, smooth. *Calyx* superior, four, rarely five-parted, smooth, permanent; segments semilunar, firm, and fleshy. *Petals* four, rarely five, oblong, obtuse, expanding, of a pale greenish yellow; soon after expansion the margins become so much rolled back, as to make them appear sharp-pointed, inserted into a hollow rim round the crown of the germ, within the base of the calyx. *Filaments* numerous, all united into one thick, fleshy ring near the base, and inserted within the petals, into the same ring, naturally dividing into three sorts, the *first* or *innermost*, short and converging round the lower part of the style, these are abortive; the *second* nearly as long as the petals, and fertile; the *third* as long as the petals, of a pretty deep red colour and abortive also. *Anthers* small, and attached to the second, or middle range of filaments only. *Germ* inferior, semiquadrilocular. *Receptacles* four, parietal two-lobed, meeting below in the centre (the body of the receptacle being there exactly rectangular,) though receding in the upper part; hence four-celled below, and one-celled above. *Ovula* numerous and arranged in six vertical rows in each cell. In the other arboreous species (C. *arborea*) there are only two rows

in each cell. *Style* the length of the stamens. *Stigma* obscurely four-lobed. *Berry* spherical, smooth, of the size of an orange, the whole substance, the seeds excepted, of a firm, yellowish fleshy consistence, intermixed with a few fibres. *Seeds* a few scattered through the pulp of the berry, shape various but generally oblong, and about the size of a field bean. *Integument* single, tough, smooth, of a light-brown. *Perisperm* conform to the seed, hard, amygdaline. *Embryo* simple, (as in the *Guttiferous* seeds) lanceolate, extending the whole length of the seed. When vegetation commences the radicle issues from the small end of the seed, close to the umbilicus; and the scaly plumula from the opposite end; the embryo furnishing the centre, or ligneous part, and the perisperm the cortical part of the young plant.

2. C. *arborea. R. Ind. pl.* 3. *N.* 218.

Arboreous. *Flowers* sessile. *Leaves* oval, serrulate-dentate. *Berries* ovate and crowned with the erect segments of the calyx.

Pelou. *Rheed. Mal.* 3. *t.* 36.

Teling. Kumbi.

Tam. Pootta-tanni-marum.

A tree of immense size, growing on the mountains of Coromandel, &c. where it blossoms during the hot season, and the seed ripens about three or four months after.

3. C. *herbaceous. R. Ind. pl.* 3. *n.* 217.

Herbaceous. *Flowers* peduncled. *Leaves* obovate-cuneate, serrulate.

Bhoomi darimba the Sanscrit name.

Beng. Bhooi dalim.

A small herbaceous plant, with a ligneous, permanent root, which shoot from short, perishable stems, or branches of only a few inches in length; a native of the interior parts of Bengal, where it was found by Dr. William

Carey, whose name the genus bears. Its numerous, very large beautiful pink flowers appear in February and March and the seed ripens in June and July.

BERRIA. R.

. Ger. Char. *Calyx* five parted. *Corol* five-petalled. *Germ* superior, three-celled; *cells* many-seeded; *attachment* anterior. *Capsule* three-seeded, three-valved, six-winged. *Seeds* a few in each cell. *Embryo* inverse and furnished with a perisperm.

B. *Amomnilla. R.**

Cing. Ammonilla.

Eng. Trincomalee wood tree.

A native of Ceylon and one of their largest and most useful timber trees. Much of the wood is annually exported from Trincomalee. Trunk in young trees in the Botanic garden at Calcutta, straight with smooth, light brown bark, and an extensive, very dense, shady head. *Leaves* alternate, petioled, cordate, sometimes slightly scolloped, from five to seven-nerved, acute, smooth on both sides, from four to eight inches long. *Petioles* rather shorter than the leaves, slender, round, smooth, and often coloured. *Stipules* ensiform. *Panicles* terminal, and axillary, large, ramose, bearing numerous, elegant, middle-sized white flowers. *Calyx* one-leaved, downy, on the outside splitting irregularly into three, four, or five segments, permanent. *Petals* five-spreading, linear-oblong, double the length of the calyx or more. *Filaments* numerous, half the length of the petals. *Anthers* incumbent,

* This Dr. R. is inclined to consider a perfectly distinct, and well marked, hitherto undescribed genus, which he has named after Dr. Andrew Berry of Madras, an eminent Physician and Botanist, to whose abilities and industry, the Botanic garden at Calcutta is much indebted. It appears to belong to Jussieu's natural order, *Malvaceæ.*

two-lobed, of a bright yellow. *Germ* superior, hairy, ovate, three-lobed, three-celled, with about six or eight ovula in each, attached in two vertical rows to the axis. *Style* short. *Stigma* three-cleft.

Capsules six-winged, round, three-celled, three-valved, each valve ornamented with two large oblong, membranaceous, reticulated, expanding villous wings. *Seeds* from one to four in each cell, irregularly ovate, clothed with much stiff, light-brown, short hair, affixed to the central receptacle near its apex. The hair very readily enters the skin and produces as much painful itching as that of *Carpopogon pruriens (Dolichos pruriens Linn.)* *Integuments* three, the exterior one friable, light-brown; the second tough, smooth and darker coloured; the inner one a membrane adhering to the perisperm. *Perisperm* conform to the seed, amygdaline. *Embryo* inverse, of a pale yellow. *Cotyledons* roundish, from five to seven-nerved. *Plumula* two-lobed. *Radicle* oblong, superior, with its point immediately within the umbillicus.

HUMEA. R.

Gen. Char. *Calyx* simple, five-parted. *Corol* five-petalled. *Nectary* five-leaved between the germ and numerous stamina. *Germ* superior, five-celled; *cells* two-seeded. *Style* and stigma simple. *Capsules* as far as five, one-celled, two-valved. *Seeds* one or two. *Embryo* erect, without a perisperm.

1. H. *elata. R.*

Mas-jot the vernacular name at Chittagong, where the tree is indigenous and grows to a very great size particularly in the back part of that province. Flowering time the month of May; the seed ripens in October, November and December.

Note. This truly majestic tree, appears to constitute a new genus in the class *Polyandria*, and order *Mono-*

gynia of *Linnæus*, and many stand between *Pterospermum* and *Sterculia* in Jussieu's natural order *Malvaceæ*, and as the plant named by Dr. Edward Smith, in honour of the late Lady Amelia Hume, had somewhat earlier been described and published in France, under the name *Colomeria*,* consequently if that name was prior to Dr. Smith's, it must have the preference on that account. Dr. R. takes the liberty of consecrating this genus to the memory of that most amiable lady, by whose death Botany has lost one of its greatest admirers and best benefactors.

Trunk straight and of a great size; that of full grown trees in their native soil about fifteen feet in circumference *four feet above the root*. *Branches* numerous, spreading, forming a very large, ovate, shady head. *Bark* of the trunk and large branches ash-coloured and smooth, that of the young parts, clothed with a little hoary pubescence. *Leaves* alternate, petioled, from three to seven-nerved, cordate, margins entire, one of the lobes into which the base is divided, generally larger than the other, upper surface smooth, hoary underneath, from four to twelve inches long, and from three to eight broad. *Petioles* swelled at each end, the rest round, and a little hoary about one-third or one-fourth the length of the leaves. *Panicles* terminal, large, ovate, very ramous; with the ramifications rather hoary. *Flowers* numerous, pedicelled, collected in little fascicles, colour bright yellow, not fragrant, but pretty large and showy. *Calyx* inferior, one-leaved, campanulate; *border* four or five-toothed, hoary on the outside, smooth within. *Corol.* *Petals* five, in the bud contorted, when expanded obliquely-oblong; yellow, spreading. *Nectary* or abortive filaments five, linear, shorter than the stamina, standing

* Smith's *Introduction to Phisiological and Systematical Botany*. *p*. 376.

between them and the germ, opposite to its five grooves. *Filaments* numerous, slender, shorter than the petals, very slightly, or rather, scarcely united at the base, and inserted round the apex of a short turbinate receptacle. *Germ* superior, and elevated on the turbinate receptacle considerably above the insertion of the *calyx* and *corol*, and very hairy, conspicuously and deeply five-lobed, five-celled, each containing two ovula attached from their middle to the inner angle of the cell. *Style* single, five-furrowed, the length of the filaments. *Stigma* simple. *Capsules* from one to five, two or three most frequent, round-oval, about an inch and a half in diameter, and one inch thick, of a firm, fibrous, woody texture, surface grey or ash-coloured, and somewhat downy, one-celled, two-valved. *Seed* one, rarely two; conform to the capsule. *Integuments* two, the exterior one light-brown and friable; the interior one membranaceous. *Perisperm* none. *Embryo* conform to the seed, erect. *Cotyledons* two, nearly equal, amygdaline. *Plumula* small, villous, two-lobed. *Radicle* oblong, inferior.

OBSERVATIONS.

An incomplete drawing and description of this very stately tree, were sent to England (with my other drawings,) in 1804, numbered 1482, under the name *Pterospermum paniculatum;* they were taken from excellent specimens in flower received from Chittagong, but unfortunately, the seed vessel of a *Pterospermum*, was no doubt brought, tied to the specimens for that of *Maus-jot*, and as such given in the above-mentioned drawing and description. This error has only been discovered during the last year (1810), by procuring not only plants for the Botanic garden but abundance of specimens with flowers and seed vessels in all stages, from Chittagong and Silhet.

OCHNA. Schreb. gen. n. 891.

GEN. CHAR. *Calyx* inferior, five-leaved. *Corol* from five to twelve-petalled. *Germ* from five to twelve-celled, one-seeded; *attachment* inferior. *Seeds* several, affixed to a large roundish receptacle. *Embryo* erect without perisperm.

O. *squarrosa. Willd.* 2. 1158. *Corom. pl.* 1. *p.* 62. *t.* 89.

Panicles lateral. *Leaves* oblong, finely serrate.

Kunuk-champa the Sanskrit name.

Teling. Yerra-juvee.

Japotapita *cinnamomifolia. Burm. Zeyl.* 123. *t.* 56.

A small tree, a native of the mountainous parts of India. *Leaves* deciduous in the cool season, and appearing with the sweetly fragrant flowers in February and March. The seed ripens in May and June.

ROYDSIA. R.

GEN. CHAR. *Calyx* inferior, six-parted. *Corol* none. *Stamina* on a column or receptacle. *Germ* pedicelled, above the insertion of the filaments, three-celled; *cells* many-seeded; *attachment* interior. *Drupe* pedicelled, one-seeded. *Embryo* erect, without perisperm.

This elegant, strongly marked genus is named in honour of Sir John Royds, one of the puisne Judges of the Supreme Court of Judicature of Bengal, an eminent benefactor to the science.

R. *suaveolens. R.*

Madhuvee-luta, the vernacular name in Silhet, where the plant is indigenous. Flowering time the month of March, when its numerous blossoms diffuse a strong, but plea-

sant odour through the forest, where they grow. The *seed* ripens in August and September. *Stem* stout, woody and with its numerous branches climbing over trees to a great extent. *Bark* of the young shoots green, void of pubescence, but covered with numerous, small, elevated, whitish specks. *Leaves* alternate, short-petioled, oblong, entire, of a firm texture, and smooth on both sides, sometimes pointed, about six inches long, and about two and a half and three broad. *Stipules* none. *Inflorescence* terminal, and axillary, when terminal it is generally a long slender panicle, as long as the leaves; when axillary, a simple raceme. *Flowers* numerous, alternate, short-pedicelled, pretty large, of a pale yellow, and fragrant. *Bractes* solitary, oblong, villous, one-flowered. *Calyx* inferior, one-leaved, six-cleft, villous. *Segments* ovate, in a double series, the exterior three rather longer than the others. *Corol* none, nor any thing like a nectarial organ. *Filaments* numerous, (about 100,) the length of the pistillum, the pedicel of which is inserted on the apex of a short column. *Anthers* incumbent. *Germ* pedicelled above the elevated receptacles of the stamina, oblong, three-celled, with about two rows of *ovula* in each, attached to the axis. *Style* very short. *Stigma* trifid. *Drupe* pedicelled, of the size of a large olive, oval, covered with a rather scabrous, orange-coloured, thin, brittle cortex, one-celled. *Pulp* in considerable quantity, soft and yellow. *Nut* oblong; *texture* of a ligneous nature, thin, one-celled, and three valved. *Seeds* solitary, conform to the nut. *Integument* single, membranaceous. *Perisperm* none. *Embryo* erect. *Cotyledons* two, unequal, the larger one deeply concave, receiving the smaller one doubled into its concavity, as in *Shorea*; they are of a firm fleshy texture, and yellowish. *Radicle* inferior, and rather within the base of the cotyledons.

POLYANDRIA TETRAGYNIA.

TETRACERA. Schreb. gen. n. 930.

GEN. CHAR. *Calyx* from four to six-leaved. *Corol* from three to six-petalled. *Filaments* dilated at top. *Anthers* twin. *Follicles* from one to four. *Seeds* arilled, one or more in each follicle.

1. T. *sarmentosa. Willd.* 2. 1240.

Shrubby, scandent. *Leaves* oval, ribbed, scabrous, serrate. *Panicles* terminal. *Flowers* monogynous. *Follicles* one-seeded.

Piripu. *Rheed. Mal.* Delima sarmentosa. *Burm. Ind.* 37. *f.* 1.

A native of Pulo Penang, Ceylon, &c. Dr. William Hunter who found it on Pulo Penang, thinks this may be Marsden's *Pulass*, see his *History of Sumatra. p.* 76.

2. T. *trigyna. R.*

Shrubby, scandent. *Leaves* broad-lanceolar, acute, serrulate. *Panicles* terminal, scanty; *flowers* trigynous. *Corol* four-petalled. *Follicles* with several seeds in each.

Manplas of the Malays on Pulo Penang, where it is indigenous in the forests, running up and down trees, &c. to a great extent. Flowering time uncertain. The *seed* ripens in July and August. *Leaves* alternate, short-petioled, short, broad-lanceolate, slightly serrate, having a few scattered hairs on both sides, from two to three inches long. *Stipules* none. *Panicles* terminal. small, a little hairy. *Flowers* pretty large. *Bractes* ovate-lanceolate, hairy, one or two at each of the divisions of the panicle. *Calyx* generally four-leaved; *leaflets* unequal, round, concave, ciliate, permanent. *Petals* generally four, much longer than the calyx, deciduous. *Filaments* numerous, clavate. *Anthers* twin. *Germ* superior. *Style* recur-

ed. *Stigma* simple. *Follicles* three, polished, size of a field bean. *Seeds* several, generally from three to five, round, smooth, enveloped in a large quantity of orange-coloured wool, growing from the eye of the seed.

3. T. *Euryandra. Willd.* 2. 1242.

Shrubby, scandent. *Leaves* elliptic, scabrous, lineate, with the margins a little waved. *Panicles* terminal, large and ramous. *Flowers* trigynous. *Calyx* and *corol* of about seven leaflets and petals. *Germs* very hairy.

A native of the Moluccas.

POLYANDRIA PENTAGYNIA.

NIGELLA. Schreb. gen. n. 935.

GEN. CHAR. *Calyx* none. *Corol* five-petalled. *Nectaries* within the corol. *Capsules* five, connected.

N. *indica. R.*

Annual. *Petals* entire. *Germs* five, length of the stamina. *Leaves* decompound. *Exterior* lip of the nectaries ovate, and deeply two-cleft, interior entire and acute.

Beng. and *Hind.* Kalla-jeera.

A native of Hindoostan. It appears, flowers and ripens its seed during the dry season. Compare with N. *arvensis*.

POLYANDRIA POLYGYNIA.

NELUMBIUM. Juss.*

GEN. CHAR. *Calyx* none. *Corol* inferior, many-petalled. *Germs* many, distinctly immersed in the turbi-

* Dr. Carey considers this name to be derived from two Sungskrit words. viz. *Neel*, blue; and *Umboja*, generated in water. Although we have not yet found a blue *Nelumbium* in these parts of Asia, yet it is said to be a native of both Kashmeer and Persia.

nate, truncate receptacle; one-celled, one-seeded; *attachment* (of the ovula) superior. *Seeds* many, lodged as in the germ. *Embryo* inverse, without perisperm or vitellus.

N. *speciosum. Willd.* 2. 1258.

Root creeping. *Leaves* suborbicular, peltate, entire. *Peduncles* and *petioles* prickly. *Flowers* many-petalled.

Tamara. *Rheed. Mal.* 11. *t.* 30.

Padma. *Asiat. Res.* 4. 286.

Sungs. Pudma, Muhotpula.

The red variety, Ruktotpula, Kokunuda.

Beng. Rukta pudma.

Sungs. The white sort, Poondūreeka, Sitambuja.

Beng. Shwet pudma.

Pers. Nilufu.

I have met with only two sorts on the coast of Coromandel, one with rose-coloured flowers, the other with flowers perfectly white, and since that time a third variety has been brought from China with smaller rosy flowers. They grow in such sweet water lakes, &c. as do not dry up during the driest season, and on the coast, flower all the year round. In Bengal they flower during the hot season, April, May and June, and ripen their seed about the close of the rains. *Root* creeping in mud, jointed at various distances, in general, fully as thick as the fore-finger, of uncertain length, but it must be very great; smooth, generally tinged with red, perforated internally with many pores. The joints in old plants are often swelled into tubulosities of various sizes; sometimes as large as a man's fist; from them issue many fungous fibres, and from the upper and the interior part of these tubulosities issue one, two, or more leaves and flowers; their insertions being surrounded with spathe-like sheaths. *Leaves* radical, from the joints, petioled, peltate, floating on the water, transversely broad-oval, entire, except at that

part which was the upper point before the leaf expanded, where it is emarginate with a point; the nerve that terminates in this point is simple and straight, all the other nerves, fifteen or thirty in number, are twice or thrice two-cleft; above, the leaf is of a beautiful pea-green colour and of a very soft velvet-like texture; underneath is a cuticle which is frequently of a turgid red, covering innumerable small vescicles, these render the leaves specifically lighter than water; the breadth of the leaves from twelve to twenty-four inches, and the length, from the emarginated point to the opposite margin, from nine to eighteen inches. *Petioles* of various length, according to the depth of the water, being always sufficiently long to admit of the leaf floating; round, rigid, as thick as a rattan, or thicker, armed with many small inoffensive prickles, and perforated with four larger and many smaller pores. *Peduncles* radical, one-flowered, of various length, round, thicker than the petioles, rigid, frequently tinged red, armed with small inoffensive prickles, and perforated with from six to seven large and many small holes. In the rose-coloured China variety, the prickles are sharper and more numerous. *Flowers* large and beautiful beyond description, particularly in the rose-coloured varieties, nearly inodorous, about nine or ten inches in diameter when expanded, they are then elevated a few inches above the surface of the water. *Calyx* none. *Corol* many-petalled (from fifteen to sixty,) the exterior ones small, and coloured, green on the outside, the middle series large, the interior lessening in size, all concave, oblong, with a minute point, lower part pale rose-coloured, deepening toward the apex. *Filaments* numerous (from two to three hundred) inserted in several series within the petals, round the base of the receptacle and about one half its length. *Anthers* linear, as long as the filaments, which elevate their apices a little above the surface of the receptacle, each crowned with a

most beautiful, white, slightly incurved, pearl-coloured club. *Receptacle* sub-conical, from the apex from ten to thirty cells. *Germs* one in each cell of the receptacle, attached at the base, oblong, one-celled; *ovula* single, attached to a swelling at the top of the cell. *Style* scarcely any. *Stigmas* fleshy, sub-infundibuliform. *Seeds* generally as many as there were germs, oval, reniform. *Integuments* two; the exterior one spongy and spreading into lamina. *Perisperm* none. *Embryo* inverse. *Cotyledons* (*vitellus*) of Gærtner two, equal, white, united at the apex to the corol, and in some degree to each other round that organ. *Plumula* of two unequal sub-opposite, long-petioled, orbicular, peltate leaves; between them and the apex or point of union with the cotyledons is a short column, which as in *Anneslea*, I will call the peduncle. When vegetation begins, this, as well as the leaves of the plumula, and their folded petioles swell and lengthen and soon force a passage through the base of the seed, &c. as very accurately represented by Gærtner, 1. *p.* 73. 4. *t.* 19. By the time the two leaves of the plumula are expanded, the proper roots begin to appear, issuing from the base of their petioles, where they unite with the peduncle.

In China there is a still more beautiful bright crimson variety, which they call Hung-lin, I have hitherto only seen a drawing of it.

The white Nelumbium differs in few respects from the red one, and may be considered as only a variety of it. The difference is as follows. 1st. In the white one the flowers are milk-white, in the red one rose-coloured. 2nd. In the white one the number of germs (consequently seeds) are from eight to twenty, in the red one from ten to thirty. The seeds of both come equally well to maturity and are equally fertile.

The tender shoots of the roots between the joints of both sorts are eaten by the natives, either simply boiled or in their curries. The seeds are eaten raw, roasted or

boiled. The leaves are used to eat off instead of plates. These holy and beautiful plants are often met with in the religious ceremonies of the Hindoos under their Sanscrit name *Padma.*

DILLENIA. Schreb. gen. n. 939.

GEN. CHAR. *Calyx* five-leaved. *Corol* five-petalled. *Germ* superior, few or many, one-celled, many-seeded; *attachment* interior. *Capsules* conjoined round a conical receptacle. *Seeds* few or many immersed in a gelatinous pulp. *Embryo* centripetal, and furnished with a perisperm.

1. D. *speciosa. Thunb. in. Linn.* 1. *p.* 100. *Willd.* 2. 1251.

Leaves petioled, oblong, acutely serrate. *Flowers* solitary. *Capsules* about twenty.

Dillenia indica. *Linn. sp. pl.* 745.

Syalita. *Rheed. Mal.* 3. *t.* 38. 39.

Beng. Chalta.

Teling. Uva-chitta, the name of the tree, and Uva-kay, the fruit.

This when in flower is one of the most beautiful trees I have ever seen; it is a native of the vallies, far up amongst the Circar mountains; is also found cultivated in some gardens on account of its elegant appearance. It flowers during the hot season, and the beginning of the rains, and the seed ripens in February. *Trunk* very straight but of no great height. *Branches* numerous, spreading, then ascending so as to form a most regular round, dense, shady head, particularly while the tree is young. *Leaves* about the extremities of the branchlets approximated, short-petioled, oblong, most regularly sharp-serrate, very firm, with many large, elevated, parallel veins, corresponding in number with, and ending in the points of the serratures, smooth, about nine inches long

by four broad. *Petioles* about an inch long, channelled, embracing half the circumference of the branchlets, leaving a permanent mark after they fall. *Peduncles* generally one amongst the leaves that surround the extremity of each branchlet undivided, clavate, round, smooth, one-flowered. *Flowers* looking down the earth finally, delightfully fragrant, very large, about nine inches in diameter. *Calyx* five-leaved, roundish, concave, thick and fleshy, enlarging with the capsule, which it permanently encloses. *Petals* five, oblong, waved, spreading, white. *Filaments* short, very numerous. *Anthers* numerous, linear, the inner series longer and larger, bending out under the stigmas and forming a large yellow globe in the centre, which is elegantly crowned with the white lanceolate, spreading stigma opening by two pores at the top. *Style* scarcely any. *Stigmas* linear, lanceolate, recurved. *Capsules* about twenty, surrounding the large, conic receptacle, sub-reniform, soft, fleshy, pale green, one-celled, evalvular, containing a pellucid glutinous liquid which surrounds the seeds. *Germs*, about twenty, surrounding a thick, firm, conic receptacle: singly linear, one-celled, containing numerous ovula in several rows attached to a two-lobed receptacle in the inner angle of each cell. *Seeds* numerous, reniform or obliquely oval, attached as in the germ, very hairy. *Integuments* two, the *exterior* one rather thick and hard, the *inner* one membranaceous, and adhering to the perisperm. *Perisperm* conform to the seed. *Embryo* small, lodged immediately within the umbilicus. *Cotyledons* two, small. *Radicle* oblong, centripetal.

The fleshy leaflets of the calyx when the fruit is full grown have an agreeably acid taste, and are much used by the natives where the trees grow, in their curries. They make a tolerably pleasant jelly. The wood is both hard and tough; and used to make gun-stocks.

2. D. *pentagyna. R. Corom. pl.* 1. *p.* 21. *t.* 20.

Leaves petioled, broad-lanceolate, acutely serrate. *Peduncles* one-flowered, lateral, fascicled. *Capsules* five.

Teling. Rowadan.

This is a large timber tree, a native of the Northern Circars; it flowers in March and April.

3. D. *repanda. R.*

Leaves oval, retuse, repand, smooth; *racemes* leaf-opposed, from five to seven-flowered. *Calyx* villous on the outside.

A native of Hindoostan.

4. D. *augusta. R.*

Leaves stem-clasping, broad-lanceolar, parallel-veined, acutely serrate towards the base, the rest repand, dentate.

An immense tree, a native of the mountainous countries on the eastern frontier of Bengal. The leaves on the young trees in the Botanic garden at Calcutta, are from two to four feet long, and from nine to eighteen inches broad; while young beautifully coloured, and then somewhat villous, they taper most toward their insertion, and there embrace the branchlet with a ruffle-like waved continuation of the leaf.

5. D. *pilosa. R.*

Leaves sessile, lanceolarly cuneiform, hairy, serratures subulate, and hairy.

A majestic timber tree, a native of the mountainous countries in the vicinity of Goalpara, on the banks of the river Megna. From thence plants have been introduced into the Botanic garden at Calcutta, where they grow freely, but have not yet blossomed; the *leaves* in our young trees are from twelve to nineteen inches long, and from four to nine broad; in the larger leaves the

serratures become more remote scallop-dentate, they are finely pointed and hairy on both surfaces, as well as round the margin.

6. D. *scabrella. R.*

Leaves petioled, cuneate, lanceolar, acutely serrate, ribbed, both sides harsh with short hairs.

A stately timber tree, a native of the mountains on the eastern frontier of Bengal.

LIRIODENDRON. Shreb. gen. n. 942.

GEN. CHAR. *Calyx* three-leaved. *Petals* nine. *Germs* numerous, one-celled, two-seeded; *attachment* interior, many imbricated so as to form a strobile, winged, one-celled, from one to two-seeded. *Embryo* centripetal, with ample perisperm.

1. L. *grandiflora. R.*

Leaves oblong, with a tapering base, entire. *Flowers* terminal, solitary; *calyx* of several deciduous spathes. *Corol* nine-petalled, the exterior ones green on the outside.

Doolee champa, the vernacular name in Silhet.

A middling sized, very ramous tree, a native of the hilly countries in the vicinity of Silhet and Chittagong, where it blossoms in April and May, and perfumes the air to a considerable distance with the fragrance of its fine large flowers; the seed ripens in October and November. *Young shoots* strongly marked with the annular marks left by the stipules, otherwise smooth. *Leaves* alternate, oblong, tapering most to the base, entire, hard, and void of pubescence, but glaucous, particularly underneath, obtuse, ribbed with large, simple, expanding veins, between which the small ones are beautifully reticulated, from six to eight inches long, and from three to nine broad. *Stipules* solitary, sheathing attached to one

side of the edges of the petioles of the next inferior leaf. *Flowers* terminal, solitary, large, as in Miller's figure of *Magnolia grandiflora,* and like them white and fragrant. *Calyx* what I consider to be it, or an *involucre* on the many spathes which cover the flower bud, and drop off in succession, as it swells, leaving strong annular marks behind. *Petals* nine, oval, thick, firm, and fleshy, with thin waved edges, the exterior three or four green, on the outside, all the rest white. *Stamina* numerous, imbricated upwards, linear, incurved, having on each side a polliniferous groove to within a very little of the base. *Germs* numerous, imbricated upward into a cone, swelled at the base, one-celled, and containing two ovula attached to the inner angle or side of the cell; upper part (style,) free, ensiform, and villous. *Stigma* simple.

Fructification as described by Gærtner *de fruct.* 2. *p.* 475. an oblong strobiliform cone, of about sixteen inches in length, and from seven to eight in circumference, upwardly imbricated, with numerous long-tailed, folicular samara, which open on the outside near the base, and expose to view the large beautiful orange-coloured seeds, often hanging by a slender, soft, sericeous filament. *Seeds* one or two, sub-triangular; *angles* rounded. *Integuments* three, the exterior one fleshy, and while fresh of a fine glossy orange colour, the second of a reniform texture, dividing into two valves, when vegetation begins, the inner one a fine membrane. *Perisperm* conform to the seed, soft and oily. *Embryo* small, lodged in that angle of the perisperm next the umbilicus. *Cotyledons* cordate. *Radicle* oval, centripetal.

2. L. *Lilifera. Willd.* 2. 1255.

Leaves broad-lanceolate, entire, smooth.

Beng. Anoa-chumpa.

A pretty large tree, a native of the hilly countries in the vicinity of Silhet.

MAGNOLIA. Shreb. gen. n. 942.

GEN. CHAR. *Calyx* three-leaved. *Corol* nine petalled. *Germs* numerous, one-celled, two-seeded, attachment interior. *Capsules* two-valved. *Seed* berried, pendulous.

1. M. *pumila. Bot. Repos. N.* 226.

Shrubby, erect, smooth. *Leaves* broad-lanceolar, entire. *Peduncles* terminal, solitary, one-flowered. *Petals* six, concave and fleshy.

A native of China. *Flower* pure white, and exquisitely fragrant. Compare with Louriero's *Liriodendron Coco. p.* 424. In the Botanic garden at Calcutta it is in blossom all the year, but has never produced even half grown fruit. The genus is therefore doubtful.

2. M. *obovata. Willd.* 2. 1257.

Shrubby, erect, twiggy. *Leaves* oblong, entire, smooth. *Peduncles* terminal, solitary, one-flowered. *Petals* six, expanding.

A native of China; it blossoms during the rainy season in the Botanic garden. *Flowers* very large, rose-coloured, and inodorous, like *pumila* it never produces fruit in Bengal.

3. M. *fuscata. Bot. Repos. N.* 229.

Shrubby, very ramous. *Leaves* oblong, ventricose, obtuse, smooth. *Flowers* axillary, solitary. *Calyx* spathaceous, petals six, lanceolar.

A very ramous middling sized shrub, a native of China. In the Botanic garden at Calcutta it blossoms in March. The flowers are rather small for a *Magnolia,* of a very pale yellow, or cream-colour, and exquisitely fragrant; it has never produced fruit in Bengal.

MICHELIA. Schreb. gen. n. 943.

GEN. CHAR. *Spathe* one-leaved, deciduous. *Corol* many-petalled. *Germ* numerous, one-celled, few-seeded; *attachment* interior. *Capsules* numerous, few-seeded. *Embryo* centripetal, furnished with a perisperm.

1. M. *Champaca. Willd.* 2. 1260.

Leaves lanceolate, round, smooth, entire. *Flowers* axillary, solitary, short-peduncled.

Champaca. *Rheed. Mal.* 1. *t.* 19.

Sampacca. *Rumph. Amb.* 2. *t.* 67 and 68.

Beng. Champaka, or Chumpa.

Sans. Champaca. See *Asiat. Res.* 4. 287.

A pretty large tree, common in gardens over most parts of India. Flowering time the rainy season; the seed ripens in the cold season. *Trunk* straight; *branches* ascending and spreading. *Leaves* alternate, round the extremities of the branchlet, petioled, lanceolate, waved, smooth, entire, from four to six inches long. *Petioles* marked on the upper margins with the cicatrices of the stipules. *Stipules* spathiform, adjoined to the petioles, caducous. *Peduncles* axillary, short, thick, one-flowered. *Flowers* large, yellow, delightfully fragrant. *Bractes* several, below the calyx, like it, but smaller, also caducous. *Calyx* a conical, leathery sheath bursting on one side, and falling off before the flowers expand. *Petals* from twelve to twenty, lanceolate, the exterior largest. *Filaments* subulate, inserted into the receptacle below the germs. *Anthers*, two, growing on the inside of each filament. *Germs* numerous, forming an imbricated cone, semi-ovate, furrowed on the outside, one-celled, with from four to twelve ovula in two vertical rows attached to the inner angle of the cell. *Style* and *stigma* from a short recurvate, ragged, glandular, yellow body.

Capsules many, sessile, distinct, oblong, obtuse, arrang-

ed round the lengthened receptacle, of the size of the first joint of the little finger, scabrous, straw-coloured, brown when dry, one-celled, two-valved; *valves* thick and firm. *Seeds* from one to twelve, attached as in the germ, various in shape, of the size of a pea. *Integuments* three; the exterior one thick, fleshy and flesh-coloured; the second hard, irregularly furrowed, of a dark-brownish black; and the inner one membranous. *Perisperm*, conform to the seed, while fresh succulent. *Embryo* small, sub-cylindric, lodged close to the umbilicus. *Cotyledons* oblong. *Radicle* ovate, pointing to the umbilicus (centripetal.)

ANNONA. Schreb. gen. n. 945.

GEN. CHAR. *Calyx* three-leaved. *Corol* six-petalled. *Germs* numerous, one-celled, one-seeded; *attachment* inferior. *Fruit* compound, many-seeded. *Embryo* amply furnished with a perisperm.

1. A. *squamosa. Willd.* 2. 1265.

Leaves narrow, oblong, obtuse, smooth. *Fruit* ovate, obtuse, squamose. *Exterior petals* lanceolate and obtuse; the *inner* scarcely any.

Beng. Ata.

Atamarum. *Rheed. Mal.* 3. *t.* 29.

Eng. Custard-apple.

Cultivated; where indigenous uncertain, it flowers during the early part of the hot season; the fruit ripens in July, August and September.

2. A. *reticulata. Willd.* 2. 1265.

Leaves oblong, lanceolate, somewhat acute, smooth. *Fruit* ovate, lanceolate and obtuse.

Beng. Noona.

Anona marum. *Rheed. Mal.* 3. *t.* 30, *and* 31.

Is said to be indigenous amongst the mountains im-

mediately east of Bengal, and universally cultivated over India.

I strongly suspect Louriero's A. *asiatica* is this very tree.

UVARIA. Schreb. gen. n. 944.

GEN. CHAR. *Calyx* three-leaved. *Corol* six-petalled. *Germs* many, one-celled, seeds one or many; *attachment* interior. *Berries* many, pedicelled on a common receptacle, one or more seeded. *Embryo* centripetal, and furnished with ample perisperm.

1. U. *ventricosa. R.*

Arboreous, with a straight trunk and diverging branches. *Leaves* ovate, lanceolate, entire, shining. *Fascicles* leaf-opposed, many-flowered. *Calyx* minute. *Petals* equal, the inner three pitcher-shaped. *Berries* oval, from six to seven-seeded.

This elegant tree is a native of the eastern hilly and mountainous provinces of Bengal, from Tippera it was introduced by Mr. Stephen Harris into the Botanic garden, where it blossoms in March and ripens its seed in July. *Trunk,* in trees of eight or ten years' growth, thick as as a man's thigh, perfectly erect, and straight, covered with smooth, ash-coloured bark. *Branches* numerous, diverging, with apices somewhat curved up. Height of the young trees twenty-five or thirty feet. *Leaves* alternate, bifarious, short-petioled, broad, ovate-lanceolate, entire, taper, obtuse-pointed, recurvate, or drooping, of a very firm texture, and shining, from four to eight inches long, and from one to three broad. *Peduncles,* or rather, fascicles solitary, nearly leaf-opposed, very short, generally bearing from ten to fifteen, long-pedicelled, somewhat drooping, pitcher-shaped, greenish white, fragrant flowers, which expand in succession. *Bractes* ovate, solitary at the base of each pedicel, with a smaller one near the mid-

dle. *Calyx* of three small, triangular, brownish leaflets. *Petals* equal, ovate, cordate, acute, the exterior three revolute, the inner three converging, and forming a conic dome over the genitalia, with the only apices recurvate, villous on the outside. *Germs* ten or twelve, nearly linear, incurvate, one-celled, containing two vertical rows of ovula vertically attached to the inner angle of the cell. *Style* short. *Stigmas* somewhat capitate. *Berries* from four to eight, short-pedicelled, ovate, smooth, of the size of a pullet's egg, yellow. *Seeds* six or seven, placed in a double order, and separated from each other by a considerable portion of pulp. *Shape* various, but always more or less oval, or oblong, much flattened on both sides. *Integuments* single, brown and pretty smooth, sub-ligneous, and thick, particularly round the margins. *Perisperm* conform to the seed, of a pale colour and horny texture, deeply intersected with numerous brown, hard fibres, which project from the hard integuments of the seed. *Embryo* small, straight. *Cotyledons* ovate-oblong. *Radicle* oblong, immediately within the umbilicus and pointing to it.

2. U. *dioeca. R.*

Shrubby. *Leaves* from lanceolate to oblong, acuminate, smooth. *Peduncles* lateral, two-flowered. *Calyx* six-leaved. *Corol* three-petalled. *Berries* fusiform, one-seeded.

Tusbee, is the vernacular name in Silhet, where the shrub is indigenous. It flowers in April and May, and the seed ripens in September. *Trunk* short, soon dividing into many branches and bifarious villous branchlets. *Leaves* short-petioled, bifarious, from lanceolate to oblong, entire, smooth, except while very young, taper-pointed, from three to six inches long, and from one to two broad. *Peduncles* lateral, and generally below the leaves, two together, or bifid, villous, about an inch long. *Bractes* lanceolate, villous. *Flowers* of a middling size, drooping. On some shrubs I could discover only male, and on others

only female, but in size and colour the same. *Male calyx* in this species must be described to consist of three, ovate, equal, lanceolate leaflets. *Petals* six, nearly adhering to each other from the middle downwards, resembling a monopetalous corol, hairy, much longer than the calyx, red. *Stamina* numerous, covering the whole sub-globular receptacle. *Filaments* scarcely any. *Anthers* turbinate, with a polleniferous groove on each side. *Germs* none. *Female calyx* and *corol* as in the male. *Stamina*, none. *Germs* numerous, covering the whole of the receptacle, hairy, one-celled; and containing one ovula, attached to the bottom of the cell. *Style* short. *Stigma* recurved, large and obtuse. *Berries* numerous, long-pedicelled, of the size of a pea, smooth, one-celled; *seed* solitary. *Perisperm* round, conform to the seed, deeply penetrated with brown fissures, with the small, straight embryo, lodged in its base, close to the umbilicus.

3. U. *bracteata. R.*

Scandent, twigs villous. *Leaves* from lanceolate to oblong, villous. *Peduncles* between the leaves two-flowered, amply bracted. *Calyx* three-parted. *Petals* six, oval and nearly equal. *Berries* oval, of the size of a pullet's egg.

Jupa-bun Kula is the vernacular name in Silhet where it is indigenous; flowers in May, and the fruit ripens in September, and is then very inviting to the eye. *Trunk* and *branches* climbing over trees to a very considerable extent; the *young shoots* are round and very downy. *Leaves* bifarious, alternate, short-petioled, from lanceolate to oblong, entire, downy, particularly while young, from four to eight inches long, and two to three broad. *Peduncles* lateral, between the leaves, very downy, bifid, two-flowered. *Flowers* small, of a pale yellowish white, drooping. *Bractes* large and downy, one at the division of the common short peduncle and one on each pedicel.

Calyx three-parted. *Segments* sub-orbicular, downy. *Petals* six, much larger than the calyx, nearly equal, oval, concave. *Filaments* numerous, short. *Anthers*, a groove on each side of the filaments. *Germs* many, in the disk, surrounded with the stamina, linear, downy, one-celled; *ovula* many, in two rows; *attached* to the inside of the cell. *Style* scarcely any. *Stigma* bidentate. *Berries* few, pendulous, of the size of a small pullet's egg, from oval to oblong, obtuse at both ends, smooth, when ripe of a rich yellow. *Seeds* a few, oval, compressed, smooth, rather longer than those of the common *Tamarind*, and of the same colour, and appearance. *Perisperm* and *embryo* as in the genus.

4. U. *odorata. Willd.* 2. *p.* 1262.

Leaves ovate-lanceolate, waved. *Peduncle* three-flowered, drooping. *Petals* equal, linear, acute, very long.

Cananga. *Rumph. Amb.* 2. 195. *t.* 65.

A native of the Malay Islands, and east of the Bay of Bengal. From Sumatra it was introduced into the Botanic garden at Calcutta in 1797, the largest of them, now 1809, has a trunk thirty-six inches in circumference, four feet above ground, and rather tall in proportion, it flowers and ripens its seed at various times of the year. *Trunk* straight throughout. *Bark* smooth, ash-coloured. *Branches* from patent to diverging. *Young shoots* round and smooth. *Leaves* alternate, bifarious, short-petioled, drooping, ovate-lanceolate, acuminate, with the margins entire but waved, smooth on both sides, from four to eight inches long, and from two to four broad. *Stipules* none. *Flowers* in small fascicles of generally three, on very short peduncles from the buds of the shoots of the former year's growth, large, drooping, of a pale yellow, odorous. *Pedicels* pretty long, recurvate, villous. *Bractes* a few, small, recurvate on the short peduncles and base of the pedicels. *Calyx* of three trian-

gular, obtuse divisions united at the base, yellow. *Filaments* shorter than the germs, each headed with a large, roundish, subulate, pointed gland. *Anthers* a groove on each side below the heads. *Germ* many, sessile, linear, one-celled, with two vertical rows of ovula therein attached to the inner angle. *Styles* scarcely any. The *stigmas*, are so firmly united into one solid, hemispheric, glandular body that they cannot be separated. *Berries* about a dozen on pretty long pedicels, from a hemispheric umbel, singly oblong, about the size of a small olive, smooth, when ripe black. *Seeds* from six to twelve, separated by the soft greenish pulp of the berry, flattened, ovate, or nearly so, pitted. *Perisperm* and *embryo* as in the genus. See *Gært. Sem.* 2. 155. *t.* 114.

5. U. *fornicata. R.*

Scandent. *Leaves* cuneate-lanceolate. *Peduncles* between the leaves, one-flowered; the exterior three petals large, and lanceolate, the inner three small, and coalesced into a cone over the genitalia.

Beng. Lutamala.

A large scandent shrub, a native of Silhet, where it flowers in May and June.

6. U. *bicolor. R.*

Scandent. *Leaves* linear, oblong, acuminate, parallel-veined, a little hairy underneath. *Peduncles* one or two between and opposite to the leaves. *Petals* six, nearly equal; the exterior three, brown and hirsute, the inner three, smooth and red. *Berries* spherical, very villous, from four to eight-seeded.

A large, stout, scandent shrub, a native of Silhet; it flowers in April, and the fruit ripens during the rains.

7. U. *cordifolia. R.*

Shrubby. *Leaves* cordate, and ovate-cordate. *Pedun-*

cles between the leaves, one-flowered; *petals* six, lanceolar, very long and sericeous.

A native of the moist vallies near Chittagong, where it grows to be a ramous shrub of about six feet in height, it blossoms in June, and the seed ripens in November.

8. U. *macrophylla. R.*

Shrubby, spreading; leaves oblong, obtusely acuminate, base cordate. *Peduncles* (knobs) leaf-opposed, short, few-flowered, flowers rotate. *Petals* equal, obovate.

Beng. Bagh-rung*a.*

A large stout spreading shrub or small tree with long, weak, sub-scandent branchlets, which are clothed with much short, ferruginous down; the *leaves* are remarkably large, often a foot long, and six inches broad, parallel-veined, with the upper surface somewhat bullate, underneath villous. The *flowers* are of a dull reddish colour, and expand an inch and a half.

9. U. *heteroclita. R.*

Shrubby, scandent. *Leaves* ovate, oblong, acuminate. *Peduncles* axillary, one-flowered, male and female on the same or different plants. *Berries* many, sessile.

Beng. Tubee-k*ura.*

A large scandent shrub, a native of the Garrow hills and other mountainous districts in the vicinity of Silhet, where it blossoms about the beginning of the rains and the seed ripens in October and November. *Young branchlets* smooth, glossy, green, with angles. *Leaves* alternate, petioled, oblong, and ovate-oblong, entire, except in young plants and shrubby, acutely serrulate-dentate, acuminate, smooth on both sides, from four to six inches long, and from one and a half to three broad. *Petioles* short, channelled and coloured. *Stipules* none. *Female flowers* axillary, solitary, long-peduncled. *Bractes* some scales round the base of the peduncles, one or two towards their mid-

dle. *Calyx* inferior, about eight or ten-leaved; *leaflets* unequal, roundish, concave, imbricated, smooth, caducous. *Corol* none. *Stamina* none. *Germs* numerous, in an imbricated, globular head, single, conical, containing two ovula that are attached to the inner side of the cell. *Style* scarcely any. *Stigma* short, small, and, bifid, situated where the keel ends in the upper edge of the twin apex of the germ. *Berries* numerous, sessile, on a globular, peduncled receptacle, distinct, turbinate, of the size of a red currant, and of nearly the same colour, succulent, one-celled. *Seeds* two, round, reniform, curvate, one end somewhat longer than the other. *Integuments* single, thick, and firm, of a brownish ash-colour. *Perisperm* conform to the seed, smelling spicy when cut. *Embryo* small, lodged in the small end of the perisperm. *Cotyledons* two small projections only. *Radicle* oval pointed, pointing to the end of the seed where it is lodged. *Male flowers* axillary, &c. as in the female; sometimes on a different tree. *Calyx* as in the female. *Corol* none. *Stamina* a small globular fleshy body in the centre formed by many imbricated, fleshy, sessile filaments, or bases for as many gaping, two-valved, one-celled anthers.

10. U. *longifolia. Willd.* 2. 1263.

Leaves narrow-lanceolate, waved, smooth, shining. *Flowers* fascicled, long-pedicelled; *petals* equal, narrow, lanceolate, waved. *Berries* oval, one-seeded.

Dev*a*dari. *Asiat. Res.* 4. *p.* 288.

Hind. and *Beng.* Dev*a*daree, or Debdaree.

Its native place uncertain. In Bengal it blossoms in February and the seed ripens during the rains; the tree is large and elegant, but of slow growth, yet the wood is soft and white, and deemed of little use.

11. U. *villosa. R.*

Leaves oval, entire, villous. *Peduncles* few-flowered.

Inner three petals larger and orbicular. *Berries* oval, two-seeded.

A tree of considerable size, a native of Bengal. Flowering time March and April, and the berries ripen in June and July. They are very much like black cherries.

12. U. *pilosa. R.*

Leaves oblong, entire, hairy, as are also the young shoots, petioles, and solitary one-flowered peduncles. *Calyx* hairy. *Petals* equal, smooth, and longer than the calyx.

A native of the Moluccas.

13. U. *grandiflora. R.*

Shrubby. *Leaves* cuneate-oblong, villous underneath, peduncles one-flowered. *Petals* sub-equal, obovate, flat. *Berries* long-peduncled, many-seeded.

A native of Sumatra, from thence introduced into the Botanic garden in 1804, and in June 1809 they blossomed for the first time. *Stem* in our young plants short, and as thick as a man's leg. *Branches* many, sub-bifarious, nearly erect, with their villous, round, extremities spreading; the height of the plants about six feet. *Leaves* alternate, bifarious, short-petioled, cuneate oblong, narrowing most towards the base and there rounded, with entire, margins and the apex rather acute, downy underneath, simple and parallel-veined, six inches long, and three broad. *Peduncles* leaf-opposed, solitary, drooping, one-flowered, villous, from one to two-jointed near the middle, and in the aril of the lower bracte a flower bud and its bracte. *Flowers* very large, flat, about three inches in diameter, of a crimson colour, gradually changing to very dark red, inodorous. *Calyx* three-parted; *divisions* ovate, veined, villous. *Petals* six, nearly equal, the three exterior ones oval, the three inner ones obovate-oblong, all are obtuse, spread out flat; their texture is soft, thick, and

slightly villous. *Stamina* numerous, forming with the pistils, a firm globe in the centre. *Filaments* cuneiform, incurved, rigid, crested.

Anthers a groove on each side of the filaments. *Germs* numerous, linear, one-celled, with rows of from ten to fifteen seeds attached to the inner side of the cell. *Style* none. *Stigmas* a clammy gland with a notch on the inside. *Berries* few, long-pedicelled, from oblong to cylindric, smooth, yellow, from one to three inches long. *Pulp* sweet and edible. *Seeds* from six to twenty, or more, crest compressed, smooth, light brown. *Perisperm* and *embryo* as in the genus. See *Gært. sem.* 2. 155. *t.* 114.

14. U. *odorotissima. R.*

Shrubby, scandent. *Leaves* lanceolate, smooth. *Tendrils* bearing solitary peduncled flowers. *Petals* equal, lanceolate, gibbous at the base. *Berries* one-seeded.

15. U. *uncata. Lour. Cochin Ch.* 4. 26.

A native of China. In the Botanic garden at Calcutta it blossoms throughout the year. It is powerfully fragrant, the odour not unlike that of very ripe apples, when laid to ripen in a garret.

16. U. *lutea. Willd.* 2. 1262.

Leaves oblong, smooth, shining. *Flowers* fascicled. *Calyx* minute. *Petals* equal. *Berries* oval, about six-seeded.

Teling. Muoi.

A native of the Circar mountains. Flowering time the hot season.

17. U. *cerasoides. Willd.* 2. 1261.

Leaves broad-lanceolate, downy underneath. *Peduncles* lateral, solitary, one-flowered. *Calyx* and *corol* nearly equal. *Berries* one-seeded.

Teling. Doodooga.

A native of the Circar mountains; it blossoms during the hot season; the *seed* ripens in July.

18. U. *suberosa. Willd.* 2. 1251. *R. Corom. pl. p.* 31.

Leaves oblong, waved, smooth on both sides. *Peduncles* solitary, one-flowered. *Exterior* three petals and calyx small. *Berries* one-seeded.

Teling. Chilka doodooga.

Beng. Bura-chalee.

A native of various parts of India, in flower and fruit the whole year round.

19. U. *tomentosa. Willd.* 2. 1262. *R. Corom. pl.* 1. *p.* 31. *N.* 35.

Leaves oblong, downy on both sides. *Peduncles* solitary, one-flowered; *exterior petals* minute as the calyx, and narrow-lanceolate. *Berries* oval, about four-seeded.

A native of the Circar mountains, where it blossoms during the hot season.

20. U. *tripetala. R.*

Leaves broad-lanceolate, smooth. *Flowers* three-petalled; petals lanceolate, fleshy.

A native of the Molucca Islands. In the Botanic garden at Calcutta it blossoms in April and September.

21. U. *axillaris. R.*

Leaves narrow-oblong; *base* rounded, entire. *Peduncles* axillary, many-flowered. All the six petals linear and equal. A native of the Isle of France, where it was found by Col. Hardwicke in flower in June and July.

22. U. *nitida. R.*

Leaves broad-lanceolate, entire, polished. *Peduncles*

axillary, many-flowered. *Calyx* minute. *Petals* unequal, the inner three cuneiform. *Berries* sub-sessile, one-seeded.

A native of the Moluccas.

UNONA. Schreb. gen. n. 947.

GEN. CHAR. *Calyx* three-leaved. *Corol* three, four, or six-petalled. *Germs* many, one-celled, few-seeded; *attachment* interior. *Berries* many, necklace-shaped. *Embryo* erect, and amply furnished with a perisperm.

1. U. *longiflora. R.*

Leaves linear-oblong. *Flowers* from two to three-petalled, of great length and pendulous. *Joints* of the berries few and linear oblong.

K*u*lla-k*u*ra the vernacular name in Silhet, where it is indigenous; grows to the size of a large shrub or small bushy tree, flowers in April and May, and the seed ripens about the close of the rains. *Young shoots* quite smooth, round, and flexuous. *Leaves* alternate, bifarious, short-petioled, linear-oblong, entire, smooth on both sides, and particularly glaucous underneath, from six to twelve inches long, and from two to four broad. *Peduncles* axillary, solitary, from three to ten inches long, filiform, smooth, one-flowered. *Flowers* uncommonly long, pendulous; yellow on the outside, bright orange on the inside. *Calyx* three-leaved; *leaflets* reniform, cordate, acuminate, very small and hairy. *Petals* two, rarely three, ensiform, thick and fleshy, from six to eight inches long, with the sides smooth, yellow on the inside, orange without. *Stamina* numerous, glandular-headed, forming a hemispheric ball round the germs. *Germs* from ten to twenty, sessile, clavate, very hairy, one-celled, ovula a few, imbricated upwards, and vertically attached to the inner margin of the styles, short. *Stigmas* large, recurved. *Berries* several, long-pedicelled, drooping, from two to four,

joints linear-oblong or sub-cylindric, smooth. *Seeds* one in each joint and of the same form, smooth. *Integument* polished, of the consistence of parchment. *Embryo* in the base of the perisperm, two-valved, from its inside innumerable fibres project exactly as in *Uvaria*. See *Gært. sem.* 2. 155. *t.* 114.

2. U. *discolor. Vahl. s.* 2. *p.* 63. *t.* 36. *Willd.* 2. 127.

Arboreous. *Leaves* bifarious, ovate-lanceolate, acute, smooth. *Peduncles* one-flowered. *Berries* from two to four, jointed; *joints* globular.

Uvaria *monilifera. Gært. sem.* 2. 156. *t.* 114.

Teling. Chilika doodooga.

A pretty large tree, a native of the mountainous parts of the Northern Circars and the country near Chittagong. *Trunk* straight, with a thin, conical, tapering head; bark scabrous. *Branchlets* bifarious, spreading. *Leaves* alternate, short-petioled, bifarious, from oblong to lanceolate, waved, smooth, pointed, from three to six inches long and about two broad. *Peduncles* leaf-opposed, or between the leaves, rather more than an inch long bracted below the middle, each supporting a single large, yellowish, sericeous, drooping flower. *Calyx*, three-leaved; *leaflets* oblong, conical, acute, much shorter than the corol, caducous. *Petals* six, lanceolate, sericeous, the three inner ones considerably smaller than the others. *Stamina* numerous, wedge-shaped, crowned with a large truncate brownish gland. *Anthers* a line on each side from the gland to the base. *Germs* about twenty, linear, densely clothed with ferruginous down. *Style* scarcely any. *Stigma* recurved, glandular, naked. *Berries* several, short-pedicelled, composed of from two to four roundish-oval, pretty smooth joints, attached to a firm globular receptacle. *Seed* solitary, round-oval. *Integument* single, brown, thin, hard, and polished. *Perisperm* conform to the seed, hard perforated, &c. as described by Gærtner.

The wood is employed for various economical purposes, but chiefly for rafters.

Note. An imperfect description and drawing, No. 956, have been sent to the Honourable the Court of Directors, at which time the flowers had not been seen.

3. U. *dumosa. R.*

Scandent. *Leaves* linear, oblong, base cordate, parallel-veined, downy underneath. *Petals* six, oblong and very large. *Berries* composed of two or three oval joints.

Tooba chura, the vernacular name in Silhet, where it grows to be a very bushy climber. *Flowers* very large and pendulous, they appear during the hot season, and the seed ripens in October.

ATRAGENE. Schreb. gen. n. 949.

Gen. Char. *Calyx* inferior, four-leaved. *Petals* about twelve, seeds tailed.

A. *Zeylanica. Willd.* 2. 1287. *R. Corom.* 155. *pl.* 2. *N.* 188.

Tendrils two-leaved.

Beng. Chagul-batee.

Found in hedges in most parts of India. The root is tuberous, the stems and branches perennial, climbing. Flowering time the rains; the seed ripens in the cool season.

CLEMATIS. Schreb. gen. n. 960.

Gen. Char. *Calyx* none. *Corol* four, rarely five-petalled. *Seeds* with a long tail.

C. *Gouriana. R.*

Shrubby, climbing. *Leaves* decompound; *leaflets* ovate, lanceolate, entire. *Peduncles* axillary and terminal, trichotomous, many-flowered. *Petals* four, lanceolate, revolute.

A native of the interior of Bengal, flowers about the close of the rains; in the environs of the ancient city of Gour, it forms with *Porana panicula* extensive, lovely festoons.

THALICTRUM. Screb. gen. n. 951.

GEN. CHAR. *Calyx* none. *Corol* of four or five petals; *styles*, persistent. *Seeds* without a tail.

1. T. *bracteatum. R.*

Perennial, scandent. *Leaves* opposite and three-fold, bi- and tri-ternate; *leaflets* long, cordate, ovate, entire; *pedumcles* axillary, solitary, one-flowered, with two opposite cordate bractes above the base.

I received this very elegant, small, scandent, plant from Dr. Carey, who found it indigenous in the northern parts of Bengal. Flowering time the end of the cold season. *Root* perennial. *Stems* herbaceous, scandent, round, smooth, scarcely so thick as a pack thread and from two to four feet long. *Leaves* opposite or three-fold between bi- and tri-ternate; *leaflets* of an oblique, ovate, oblong, cordate shape, entire and smooth on both sides, size various, the largest seldom more than an inch long. *Peduncles* axillary, solitary, erect, one-flowered, with two opposite cordate bractes above the base. *Petals* four or six lanceolate, expanding, very pale blue. *Stamens*, one-fourth or one-fifth the length of the petals. *Germs* from fifteen to twenty. *Styles* scarcely any. *Seeds* with a sharp stiff back.

RANUNCULUS. Schreb. gen. n. 953.

GEN. CHAR. *Calyx* five-leaved. *Petals* five, with a honey-bearing pore within the claw. *Seeds* naked.

R. *indicus. R.*

Erect, annual; *calyces* spreading; *flowers* many, termi-

nal, lower leaves petioled, three-parted, and ternate, with segments divided above, they are sessile, ternate and simple; *stamens* twenty; *seeds* smooth.

A native of Bengal, where it appears in shady places during the cold season. *Root* fibrous, annual. *Stem* erect, above very ramous, smooth, piped, about one and a half or two feet high. *Leaves* below petioled, three-parted and ternate, with leaflets divided above, sessile, ternate and simple, with leaflets linear-lanceolate; all are smooth on both sides. *Stipules* membranaceous. *Flowers* terminal, and from the divisions of the branchlets forming nearly an umbel, small and yellow. *Calyx* spreading, a little woolly outwardly. *Nectaries*, about twenty. *Seeds* sessile on a cylindric receptacle, oval, laterally compressed, with a pointed top.

CALYCANTHUS. Schreb. gen. n. 870.

GEN. CHAR. *Calyx* imbricated, squamous; *corol* many-petalled. *Germs* several, one-celled, one-seeded; *attachments* inferior.

C. *præcox. Willd.* 2. 1120. *Bot. Mag.* 466.

Leaves opposite, from lanceolate to ovate, oblong; *flowers* axillary, solitary, sub-sessile; *inner petals* smaller.

Obai. Kæmpf. amoen. 878. *t.* 899.

From China this sweet smelling, rigid shrub has been received into the Botanic garden at Calcutta, where it blossoms during the months of December, January and February, at which time it is nearly destitute of leaves, for they are deciduous in Bengal during the cold season.

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*** *The words in italics are synonyms.*

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